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THE TEACHING OF DERMATOLOGY *

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SAN FRANCISCO

The tendency in a number of medical schools is to place dermatology in the elective group of the curriculum; in others, the tendency is to decrease the number of required hours, thus conforming too closely to the minimum amount of time allotted by the schedule of the Association of American Medical Colleges, namely, forty-five hours. If there is any special branch of medicine which should be required, it is dermatology.

If the student intends to become a general practitioner, to confine his interest to special branches or to enter public health work, a course in dermatology and syphilography extending over at least sixty hours is absolutely essential. It is certainly unwise to graduate a student who cannot differentiate syphilitc lesions from those of a similar type, or who cannot recognize the present mild form of variola and other exanthems.

General practitioners should be able to recognize and successfully treat ordinary impetigo and typical scabies. During vacation periods at summer resorts, or while traveling, it is frequently necessary for physicians to express an opinion on some acute cutaneous eruption, and a knowledge of the subject will frequently prevent serious consequences. As examples of common errors, the surgeon is too eager to operate on a tuberous bromid or iodid eruption, and pityriasis rosea and German measles are frequently diagnosed as syphilitic.

Elementary dermatology should have its place early in the curriculum. Students must be taught the histology of the normal skin and to recognize such histopathologic changes of this organ as are of diagnostic value. As the course progresses, various subjects can be considered in greater detail. This should be done by means of lantern slides, colored photographs, microscopy and by clinical demonstrations.

In addition to this required work, opportunity should be offered to students who desire to do special work in this branch of medicine. As an elective course in the senior year, students should work in the outpatient department as clinical assistants. In this way they have an opportunity of writing prescriptions, observing results of treatment and seeing the application of phototherapy, roentgenotherapy and carbon dioxid snow. A knowledge of these different types of therapy can be acquired only by practical work.

The teaching of syphilis should be closely allied to the teaching of dermatology, for the reason that the earliest manifestations are cutaneous, and students should be taught to recognize the disease in its incipiency. The fact is well established that only on early radical treatment rests our hope of aborting the disease. Ordinarily, patients prefer to have treatment carried on in one department, and it is advisable to have frequent consultations rather than to refer patients to another department of a teaching institution for a continuation of the treatment. Accordingly, a general outline of the course of syphilis should be given at an early period in the tuition of a medical student. This should include all of its manifestations, namely, the microbiology, pathology, cutaneous evidences of the disease, involvement of the circulatory, respiratory, alimentary, renal, osseous and nervous systems, etc. Details of these conditions should be taught in general medicine and in the different specialties. But the student should be taught that no matter where the evidence of syphilis is, this disease should be considered as a general infection, and needs prolonged treatment. Many examples of syphilitic involvement of the iris are treated until the local condition clears and then discharged from further therapeutic interference, whereas the patient should have antisyphilitic treatment extending over many months after the eye signs of the disease have disappeared. Such work should be followed up by those doing special work in syphilis or by the department of internal medicine. Repeated consultations by neurologists, even in early syphilis, are advisable, and frequent serologic examinations are strongly advocated and may be of much value.

When one considers the percentage of the population which is affected with syphilis, it is evident that we should lend our efforts to the control of the disease, and the best way to accomplish this is by early diagnosis and the proper treatment. The examination of syphilitic lesions by means of the dark field microscope is not used as much as it should be. Physicians are still inclined to wait for the so-called secondary syphilitic developments; but it must be emphatically impressed on medical students that all delays in diagnosis and treatment decrease the chances of cure. This is partly due to the lack of proper instruction of medical students, for they should be taught that the early recognition of the disease should be one of the most important functions of the department of dermatology.

Since cases of leprosy are increasing in this country, on account of closer relationship with endemic areas in our tropical possessions, a knowledge of this

* Chairman's address, read before the Section on Dermatology at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

subject is most essential. This, again, is a disease which usually is first evidenced by skin changes and therefore should be considered within the teaching range of the dermatologist. In case the government decides to isolate all leprosy patients in one or more leprosariums, this subject should be taught in such an institution or by means of colored photography and lantern slides.

There are a number of substantial reasons why photography, in its various methods of expression, must be considered as a valuable adjunct in the teaching of dermatology. But one of these reasons stands well out above all the others, namely, that by the use of the camera, visual records are obtained of the cases under observation.

Photography is no longer limited to the record of a case in a combination of black and white and their respective tone values. With a constant improvement in the manufacture of the autochrome plate and its subsequent treatment after exposure, a remarkably realistic reproduction of cutaneous lesions is quite within the reach of those who have only the ordinary training in photographic procedures. The Lumière autochrome product seems to have given in a general way the best results. Autochrome plates of the "lantern size" type are unsatisfactory because of technical difficulties in their projection. It is therefore the wiser selection to use larger plates, say 5 by 7 inches. These are easily handled by observers, permit greater size-scope of the subject, and are quite well illuminated by any window of average size, even though there may be but indifferent light conditions.

The black and white method of recording cases has at present two advantages over the autochrome method: one that it permits more detail, and secondly that paper prints may be obtained from this type of making photo impressions.

For projection exhibitions, the black and white lantern slides are most satisfactory. Color may be added to these by the use of dyes and the brush; but, except for selected cases and in the hands of an expert colorist, this phase of photography is not to be recommended in the presentation of skin diseases to medical students.

The advantage of having a serologic department connected with the department of dermatology cannot be overestimated. Students should be taught the uses and abuses of the various serologic procedures now in vogue. Only those students who are particularly interested in this subject should be taught the technic, but all students should be required to know how to interpret results and also to know the limitations of the various methods used.

Medical students should be taught the importance of a social service department in connection with their hospital and outpatient work in dermatology. Patients must be followed into their homes so that proper treatment can be carried on; the importance of continuing treatment after the disappearance of syphilitic manifestations must be urged, and proper methods of preventing the spread of disease must be instituted. This should be brought to the student in two ways: first by allowing those who work in the clinic the advantage of a well organized social service department, and second, by detailing students to work in the social service department itself.

Modern investigation and research in dermatology indicate that there are many dermatoses associated with internal pathologic conditions. Many types of eczema formerly thought to be the result of local trouble are now considered to be associated with focal infection and sensitization. The various types of leukemia may produce dermatoses which can be classified only after repeated blood examinations. Spontaneous disappearance of tuberculides after the removal of a local tuberculous focus points to the necessity of thorough general examinations. The frequent association between changes in the thyroid, parathyroid and suprarenal glands, with cutaneous pigmentations and dystrophic changes in the teeth and nails, brings the subject of cutaneous diseases in still closer relationship with internal medicine.

These points serve to emphasize the importance of treating patients with obscure cutaneous eruptions in a hospital where they can be studied from all phases by many physicians and observed by advanced students. By this method, cases in which the etiology cannot be ascertained will have the advantage of study by the dermatologist, pathologist, chemist and the physician doing internal medicine; and in this collaboration rests the future in the study and development and teaching of dermatology.

SOME OBSERVATIONS ON THE TEACHING OF SURGERY*

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Every teacher recognizes the fact that success in the making of a surgeon depends, first of all, on the aptness of the pupil. It may be true that "poets are born, not made," but years of patient toil in training await the making of a surgeon. He must possess by nature those rare qualities which are essential to successful development. His must be a brain not only endowed with an extraordinary power of analysis, but equally gifted in construction. He must possess moral courage of that heroic type which recognizes in "duty" the sublimest word in our language, and physical courage which is not embarrassed by obstacles seemingly insurmountable, nor appalled, even in the presence of the Great Disaster.

In the performance of a formidable operation, the surgeon stands in need of qualifications greater than those of the successful general, for while each must be quick to appreciate the kaleidoscopic changes in their respective fields, the commander relies on others for the execution of his orders: the *hands* of the surgeon alone must meet the issue before him.

May I emphasize the plural of these essential members, the hands? For of all the world's workers, the surgeon needs two hands, instead of one.

Of the various problems in the development of our race to its fullest usefulness, the failure to appreciate the value of ambidexterity is to me the most inexplicable. Bimanual deftness developed in the forming, the growing period, not only adds to technical perfection, but beyond all doubt aids in the development of both halves of the brain, so that these two halves, equally well nourished and alert, work together as one organ, if I may employ a homely simile, like the two

* Read before the Section on Surgery, General and Abdominal, at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

horses of a well trained and well matched team, thus assuring the complement of mental energy.

Physically, mentally and morally qualified, the embryo surgeon enters the laboratory, for on this foundation must rest the hope of efficiency. Only a thorough knowledge of the normal tissues can render possible the recognition of the many morbid changes which are characterized as disease. By the laboratory is implied not only microscopy and organic chemistry, but also normal and abnormal or morbid anatomy, and animal experimentation. In the mastery of regional anatomy, the employment of frozen sections is essential; and while the perfection of modern photography enables the student to preserve accurate pictures of the sections, nothing serves to fix the relations of the tissues in the mind so well as hand tracings on frosted glass, laid directly on the section.

While in the teaching of clinical surgery, some general idea of the technic may be obtained by observation, from points more or less removed, in the ordinary amphitheater, the practical knowledge which is absolutely essential can be acquired only by immediate personal contact. The hospital intern reaps invaluable benefit from his position as assistant at the elbow, or across the table, from the master; and if he be wise, and the teacher foresighted, he will be made to follow each case throughout the postoperative period, even to the necropsy, where the bitter lesson of error in diagnosis or technic may often be profitably emphasized.

Year by year, in our work at the polyclinic, we have approached what we now call the "group method of personal instruction," allotting the rôle of intern or assistant intern to the student who, after the required preliminary term of service, having demonstrated, in our judgment, a justifiable fitness, is allowed to operate under immediate supervision and guidance.

With the advent of motion picture photography, we began, and are still carrying on, experimentation, in order to satisfy ourselves of the value of this means of demonstrating operative technic to our classes. Operations on the cadaver and the living subject have proved fairly satisfactory, and we incline strongly to the opinion that, with an improved apparatus and wider experience on our own part, as well as on the part of the mechanician, still better and even more satisfactory results may be achieved.

A gratifying feature of this particular work is that it makes it possible to lend these films to medical societies in all parts of the country, thus enabling many practitioners who cannot find time to visit the central clinics to profit by these attractive demonstrations.

ABSTRACT OF DISCUSSION

DR. ARTHUR DEAN BEVAN, Chicago: I am not sure whether these moving pictures will have any great value in the teaching of surgery or not. They have a certain value, but I do not think they in any way replace the actual work on living material itself. In the discussion of the teaching of surgery we must differentiate between two very definite and distinct things, the teaching of surgery in the medical school to men who are being prepared to become general practitioners, and the teaching of surgery to men who are to become surgical specialists in various fields. I shall not go into the details of the teaching of undergraduate surgery. I would like to emphasize the point, however, that it must be very largely done with actual material in the hospital and dispensary and a part of that teaching, even for the man who is to become a general practitioner, must be at least a year in a hospital as an intern. Most of us received our surgical training either in a medical school alone or in a medical school with the addition of a hospital internship, and there was a time when men who had this hospital year were regarded by those who had not as being fortunate and as having had a great advantage. Today there is a demand for a better type of surgeon than the man who starts in simply at the end of his college work in medicine or even with a hospital internship. I believe that the time has come when the members of the organized American profession should recognize the fact that in order to be a skilled specialist in any surgical field that there is required more than the mere training in the college and the hospital internship. It is our duty to provide some scheme for additional special training of at least two or three years of work in our best clinics, in our best surgical departments, in our best hospitals. We must provide some means by which these young men who come to us anxious to specialize in some surgical field will be able to receive the necessary additional instruction, i. e., two or three years of work in a surgical clinic as an assistant in some well organized clinic. To do this we must do another thing. Many men who go into medicine have very little money. They cannot afford to spend two or three years to prepare themselves for special work in surgery. For these men we must provide salaried surgical fellowships, salaried house surgeonships. They are sometimes the very best men that come to us.

DR. THOMAS A. STODDARD, Pueblo, Colo.: We are told many of the things that a medical student must have to perfect himself in surgery. But not all of the things have been mentioned. He must have teachers. That is very important. Neither the profession of medicine nor any other is blessed with many giant intellects in the line of teaching. And when we take into consideration the fact that many of our teachers are chosen because they have a "political pull," if I may use that expression, and not because of any fitness on their part to convey ideas to the students, then we must realize that it is a most important question that we have before us. The ability to teach does not come by education. It is intuitive. Not many, in the aggregate, are able to convey to others the ideas that they possess. Not only must we be able to convey to students' minds the proper methods of operative procedure, when it comes to surgery, but more important, when to operate, and most important of all, when not to operate. The honor of the profession is forgotten too frequently in our rush for new operative procedures, and we must teach our students that there is something more necessary than the ability to cut tissue, to tie a vessel.

DR. HENRY O. MARCY, Boston: Years ago Marion Sims was in the forefront as one of the great surgical pioneers. John A. Wyeth married his beautiful daughter and you can see where Marion Sim's work has fructified in that which was shown you this very day. Our beloved Dr. Wyeth found his inspiration and his encouragement in the greatest of home influences. A large circle of devoted friends mourn the recent death of this most noble woman, Florence Nightingale Sims.

> Star of the North; thou most constant star,
> Wherever I wander o'er the land or sea;
> Beacon of hope, still shining from afar,
> Unto the heaven of rest thou guidest me.

DR. JOHN A. WYETH, New York: I agree fully with Dr. Bevan, that moving picture demonstrations of operations can never take the place of that better method of teaching surgery, the "group method" and the "intern method." That the moving pictures will find a large field, I have no doubt, especially in demonstration of the grosser technic of certain surgical procedures to larger audiences than can be benefited by the group method. We still use the amphitheater method with great satisfaction to our students, but we are employing more and more each year that method which allows not more than four or five of our students to be present around the operating table at any one procedure, and, as a rule, some of these are being trained as assistants. We are now going further than this with what we have termed our "assistant intern method." With the very large material at our command, and a large staff, we are enabled to assign a pupil who takes a course of study for six months to one year, or longer,

to two operators, to each of whom he serves as second assistant half of his term, and as first assistant for the remainder, during which later period, if he has demonstrated ability to operate within perfect limits of safety to the patient, he is allowed the same privileges that are granted to interns on the hospital staff in the last months of their service. This method we find has given us more satisfaction as teachers than any other.

HOSPITAL INTERNSHIP*

J. M. BALDY, M.D.,
PHILADELPHIA

To demand a year or more of time of a young man just leaving the medical schools after having undergone all the sacrifices necessary to his medical education is a serious matter, especially when we consider the age at which the average medical student leaves the medical school. Consequently when the state demands an internship of a period of time in a hospital, it is bound to see that the hospital providing this internship is capable of returning to the intern a competent *quid pro quo* for his time and his sacrifice. This means the standardization of hospitals. just as medical schools have been standardized and are still in process of being standardized.

It is not the intention to discuss in detail the organization of all departments of a hospital; this has been done many times by others well qualified to do so, and a fair understanding obtains as to these matters. Rather is it the intention in a general way to call attention sharply to those departments which really go to make up a true hospital but which, in the course of a systematic and fairly exhaustive inspection of over 200 hospitals, including state owned hospitals, the Penhsylvania medical authorities have found to be generally ignored, or if in existence at all, were in such a large number of instances found to be so poorly developed as to be worthless for the purpose of proper and efficient scientific work, either as aid to proper and accurate diagnosis or as useful for instruction of an intern.

The question then primarily arises, What is a hospital? From the point of view of the internship it is utterly impossible to consider many institutions at the present time calling themselves hospitals, under this designation. In constructing a true hospital, certain scientific departments should first be provided for; the balance of the hospital should be built around these departments. Principally these departments are the pathologic and clinical laboratories, the Roentgen-ray department, the anesthetic department, the morgue and the necropsy room, and a competent system of record keeping throughout the whole institution. These things are as necessary as is a kitchen, a laundry, a superintendent's office, a boiler house, the medical and surgical wards, or any other essential department, and no institution should be dignified with the name of hospital without each and all of them being competently provided for. It were supererogation to state that medicine cannot be competently practiced or taught today without the aid of these departments, and if this be true, then it follows as a matter of course that the intern cannot be competently educated in an institution which does not provide these facilities, nor can the patient submitted to its care receive the full benefits possible from modern medicine. In attempting to do so, an institution does not give either the intern or the patient a fair and proper service.

For an institution to have these departments within its walls is not sufficient. Their establishment and equipment carries with it the supposition that they must be administered by a proper personnel. By a proper personnel it is not meant that figureheads be appointed for this work, but that men and women with a full technical knowledge of the work of the various departments, aided by competent assistants, be in control; that these heads be active in their duties, and that they be of such a type as to be able to impart a knowledge of the work as well as perform the work of their several departments. Furthermore, it does not mean that these departments should exist in the hospital and not be used by the medical and surgical staff. It is perfectly patent that in many hospitals the staff, in many instances, is composed of men unfitted for the work assigned to them — unfitted not only as teachers of the intern but also to give that service to the patients submitted to their care which should be given, in accordance with the possibilities of modern medicine.

The efficient handling of the scientific departments means team work on the part of every one throughout the whole institution. Staff men who neglect the opportunities offered by the scientific departments should be promptly retired and should be no longer tolerated in the hospital's service. Team work involves not only the cooperation of the staff men with the laboratories, but also the cooperation of the superintendents and boards of managers. If a sufficiency of budget is not provided, competent work cannot be done in the scientific departments for lack of means in the doing. Consequently boards of managers should include in their budget ample funds for carrying on the work of these departments.

Superintendents should so arrange the details of their superintendency that certain routine work goes daily to the laboratory, whether or not the staff men make the request. For instance, all tissue removed in the operating room should be sent as a routine to the laboratories for investigation; certain ward material should be taken as a routine to the laboratories for examination; the milk and water used in the institution should be investigated systematically and periodically; it should be a matter of routine that all vaginal secretions of children, smears from throat infections, sputum in possible tuberculous cases and various other conditions should be carefully studied. If staff doctors do not care for the information derived from these sources, the patients are nevertheless hospital patients and the hospital should secure the proper data for their own uses and records. The staff man who does his duty and is worthy of appointment will use the laboratories freely in many ways. Without this no hospital is doing its full duty to its patients, and it is entirely neglecting its duty to its interns. The hospital function involves the proper scientific treatment of its patients, and the education of the intern as its principal functions; this to be supplemented by the investigation of new remedies and by research work in the larger institutions.

No institution in these days of workmen's compensation acts can do justice to its clientele, whether workmen or employers, without the full and competent use of the Roentgen-ray apparatus. It is not sufficient that the function of this department be confined to primary diagnosis. Diagnosis is of course one of its principal functions, but there follows immediately there-

* Read before the American Academy of Medicine, Detroit, June 9, 1916.

after the great importance of record keeping. To illustrate: For the hospital to assume, in the case of a fracture or dislocation, that its duty is fulfilled when the picture of the injury is recorded, is erroneous. The condition of this injury at the time of discharge and supposed cure is equally as important, and should in every instance be recorded; and the records, in the shape of the roentgenogram, should be properly filed and preserved for a period of years.

The education of the intern in the matter of correctly reading plates and interpreting them is equally a function of this laboratory. And no such laboratory is complete which is not equipped for and actively engaged in treatment work.

Records in all departments of the institution are a requisite of a properly standardized hospital. These records should cover, as a minimum, alphabetical admission card, a record card according to diseases, history sheets, temperature charts, order sheets, bedside records, operative and anesthetic records, laboratory request and findings sheets with card index in the laboratory, request and findings sheets with card index in the Roentgen-ray department, and follow-up cards, all carrying the house number. The laboratory and Roentgen-ray number should appear on their respective request sheets. In addition to this in the laboratory there should be filed seriatim, with the laboratory number attached, all slides and paraffin blocks. In the Roentgen-ray department all plates, having attached the Roentgen-ray laboratory number, should be filed seriatim. It should be essential in every hospital not only that these records be in existence, but also that they be systematically and fully recorded and then properly filed. Here again without competency in the superintendency the situation becomes hopeless. Records properly kept are a source of education to those making them; are a source of the utmost value to future diagnosis and medicolegal matters; are a source of demonstration of the efficiency of the work done in every department, and of those in control of the work, and are a fund of information for the boards of managers as to the competency of superintendents, interns and of members of the medical and surgical staff. By reference to the laboratory records filed in the office, any board of managers can tell promptly which members of the medical and surgical staff are engaged in the scientific practice of medicine and which are mere "prescription writers," and consequently which should be retained on their staff.

The intern cannot receive a competent service in an institution which is manned by a staff whose members walk through their wards, spend a few minutes with their patients, make few or no scientific investigations, do not discuss their cases, and merely prescribe drugs. Such a service is worse than useless to the intern, and in nine cases out of ten it is equally useless to the patient. The intern is entitled to a fair measure of instruction, and the authorities should demand that its staff members explain their cases to the intern in the course of the rounds and that the service be made a real educational one.

It is rare that the intern will receive any competent service in the hospital which opens its doors to all the doctors in the community in which it exists. A standard hospital should have a staff, carefully picked for its competency in all departments, and the work in the wards of the hospital should be confined to this staff. The intern should receive a rotary service throughout all departments, the service being so arranged that he will receive a maximum of time in each. In a year's service in a hospital he should have a minimum of two months in the laboratory alone without any other service whatever complicating; and the better time for this service is in the early part of his internship. During this service he should be at the command of the pathologist alone, and his full time daily should be spent in this department. If it is necessary that this service, because of the number of interns employed in the hospital, be combined with, for instance, outpatient work or surgical dressing work, then the time in the laboratory should be increased to three months or more in order that the intern shall have received the equivalent of a full two months' service, as a minimum. It goes without saying that it is desirable that the laboratory service be complicated with no other service whatever.

The anesthetic department should be under the direction of a member of the staff, this member to have at least one trained full-time individual, preferably a woman, as assistant. During the service of the intern in this department, which should be a distinct and definite service, there should always be a watchful hand kept over him during each administration of anesthesia, throughout his full term. To simply instruct a new intern, fresh from college, for a week in the giving of anesthesia, and then to allow him to administer it for the next two months without supervision, is not competent either for the safety of the patient, for the comfort of the surgeon or for the education of the intern, and should not be tolerated. One or more full-time individuals in this department are a necessity in a modern hospital, and should be insisted on. The work of the anesthetizer should be to administer anesthesia in certain cases and to educate and supervise the intern when giving the anesthesia, throughout his full service. A physician living out of the hospital and practicing medicine is not competent to undertake this work: few hospitals can afford a physician on full time for such work. A reasonable solution is the woman anesthetist, preferably a former trained nurse especially instructed in these matters. In small hospitals a very competent and economical arrangement may obtain by which the laboratory technician and the anesthetizer may be combined in the same individual: the responsibility of seeing that the records throughout the hospital are properly recorded and filed might in some instances be properly placed in the same hands.

The lack of interest in necropsy work in America is usually attributed to difficulty in obtaining material for this purpose, but as a matter of fact is largely due to indifference on the part of the hospital authorities. An effort should be made in every instance, especially in an institution with educational pretensions, to obtain this material; the pathologist might obtain many a consent if he be given an opportunity to do so. It is plainly evident that the less work of this kind performed, the less efficient is the staff, the less reliable are the records, and the less vital is the instruction received by the intern. This indifference is one of the greatest defects of the American hospital, and a supreme effort should be made to rectify it.

2219 Delancey Street.

Chronic Diseases and Advertised Remedies.—It is safe to say that most advertised remedies for chronic disease are actually harmful in such conditions.—*Health Letter*, Life Extension Institute.

THORACIC DISEASES

THE STATUS OF SURGICAL THERAPY *

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ROCHESTER, MINN.

In addressing, single handed, a group of practitioners of internal medicine, I realize that I do so at my own risk. I beg your indulgence, however, for my theme is one which vitally concerns us all.

The treatment of diseases of the lung, pleura and mediastinum is in a lamentably chaotic state. Much has been written on the pathology, bacteriology and clinical picture of thoracic diseases. But what are we doing which is curative for the mortals thus afflicted? Are we not grossly incompetent? Is it not probable that more cooperation between the internist and surgeon might result in better treatment of the patient? Is the surgeon operating on lesions which the practitioner might cure? Is the practitioner treating some patients unsuccessfully whom the surgeon might cure? Are we sufficiently familiar each with the other's more recent advances in therapy? Or have we perhaps made no advances?

The thoracic cavity is too treacherous a region to become the scene of pastime surgery. The thorax surrenders all playground titles to the pelvis.

Surgery of the pleura begins only at the point where nonoperative treatments have failed. Duodenal ulcer may respond to both surgical and medical treatment. Both will be employed. Not so of lesions of the thorax. No surgeon will be fool enough to enter the chest until his "angel brother" internist fears to tread further without success.

No region in the body demands the combined efforts of physician and surgeon more than the pleural cavity. The internist occasionally needs the surgeon, and the surgeon never ceases to require the conservative help of the physician. Therefore, kindly regard us thoracic surgeons as your servants rather than as your substitutes, as your consultants rather than your competitors.

If we are to be your servants we must convince you that we are neither presumptuous, bold nor boisterous, but rather cautious, conservative and conscientious.

You will find us useful and safe in the treatment of postpneumonic abscess. We are not unmindful of the high percentage of spontaneous cures by bronchial drainage alone. We urge, however, the privilege of early consultation that we may aid in determiining the point at which spontaneous recovery is doubtful and at which the operative risk begins to increase. In such cases, ours is a record of extremely low mortality.

In chronic lung abscesses we are less successful. We drain single abscesses and overlook others. We allow our drainage tubes to produce lung necrosis and fatal hemorrhage. We would welcome the exclusion of this group of cases from the surgical field. We watch with interest your efforts with vaccines, climatic influences and hygiene, but we grieve at your limited accomplishments.

We believe that early compression therapy in chronic abscess cases will do great good. If you are unsuccessful in collapsing the infected lung with artificial pneumothorax, we would much prefer to operate to strip adhesions, thus facilitating the collapse which you will maintain later, than to be requested at a late hour to perform a drainage operation in a thoroughly septic patient.

Bronchiectasis would seem to be a chronic, incurable disease. The records are hopelessly void of successes without surgery and painfully attended with fatalities by operation. We venture to suggest that the practitioner withhold such patients with even more than his accustomed tenacity; not obstinately, however, but intelligently.

In true bronchiectasis, expectorants, inhalations, cough mixtures, climatic changes and vaccines fail. Artificial pneumothorax has been reported as curative. I entertain grave doubts as to the truth of such reports. Either the reported cases have not been true bronchiectasis or a cure has been claimed merely because of a considerable temporary reduction in the quantity of sputum. In three cases of bronchiectasis confined to one lower lobe I have packed the lower pleural cavity with many yards of gauze. A chronic empyema has been artificially produced with incarceration and compression of the diseased lobe. The quantity of sputum has been slightly reduced; otherwise the disease has continued unaltered. If such radical compression fails to obliterate the cavitations and to produce cicatrization, how much less will the intermittent maintenance of artificial nitrogen pneumothorax accomplish?

Further, do not invite or permit a surgeon to drain your case of bronchiectasis. He will do no good and possibly much harm.

Assuming the correctness of my contention that expectant treatment, vaccine therapy, artificial pneumothorax and drainage operations are valueless in bronchiectasis, we ask what can be accomplished with our present knowledge? In eight or nine cases out of ten, absolutely nothing which is curative. In the tenth case, however, with the process confined to one lower lobe in a young adult patient with good resistance, further consideration is to be entertained. Look on the pathologic condition of the diseased lobe as beyond hope of correction except by actual removal. Let no man attempt a lobe excision in a single operation. Your otherwise comparatively content and even efficient patient, if thus treated, will soon be dead. A single lobe of the lung may be removed safely in a three-stage or four-stage operation, which I have described elsewhere. Within a year a small series of cases thus treated will be reported. The results so far are certainly most promising. Meanwhile we remain hopeful and open to conviction that internists will substitute a nonoperative cure; the surgery of bronchiectasis is at best treacherous and laborious, and, to say the least, filthy.

Emphysema is another stumbling block and again a chronic pathologic condition. Surgery offers but one operation, namely, the removal of several costal cartilages on one or both sides. It accomplishes increased mobility and expansion of an otherwise rigid thorax. In a considerable proportion of cases it relieves distressing symptoms. It does not cure. Heart and kidney complications and suppurative bronchitis are contraindications. Much reduced expansion is the sine qua non of indications. We have too few results on which to base definite opinions as to the value of this procedure, but inasmuch as it is comparatively safe, we urge you to submit cases that we may both know more as to its real significance.

To spare you the mortification of accusing us surgeons of incompetency in the handling of pleural empyema, I will make a series of confessions. Not

* Read before the Section on Practice of Medicine at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

infrequently we operate for acute empyema and fail to find pus at the very point at which you have recently located it with a needle. You may justly contend that our methods of exploring the pleural cavity are inadequate. If a finger thrust through an opening made by the removal of a half-inch of rib fails to strike pus, naturally you cannot be entirely satisfied that it is absent. Having urged the internist to prevent the occurrence of chronic empyema by the early detection of pus following pneumonia, we sometimes so badly handle an acute case that it is soon converted into a chronic case. We fail to place the drainage tubes at the bottom of the cavity. We either apply suction at the expense of drainage or we drain without providing for the expansion of the lung.

These and numerous other surgical errors it is well you should know. You have much to do with the postoperative conduct of empyemas and are justified in demanding that such surgical fallacies be corrected that your patient may more promptly recover. If an operative case of acute empyema is still draining at the end of eight weeks, do not remove the drainage tubes and trust to the Almighty; do not inject various pastes and solutions or administer vaccines until you have called back the surgeon. Point out to him that the Roentgen ray shows lack of lung expansion, introduce a probe and demonstrate the persistence of a considerable cavity. Remove a small piece of tissue at the mouth of the drainage opening, and have a section made and examined for tubercles. Be satisfied only by this procedure as to the possibility of a tuberculous empyema. (Cultures and guinea-pig inoculations from the purulent discharge will rarely prove the presence or absence of tuberculosis.) With such data at your command, the surgeon may admit that the delay in healing is mechanical. He may advise redrainage and freer drainage at a lower point. He should consider the advisability of opening the chest widely and freeing the lung of its adhesions to prevent such fixation as will otherwise result in a chronic empyema.

If despite all such further efforts an empyemic discharge continues four and five months, another surgical consultation is indicated. Probably then a decortication of the lung or some form of osteoplastic operation is indicated to obliterate the cavity. If such is done early when the ultimate necessity is obvious, healing may be complete in less than a year. It is criminal that these patients should be allowed to drift along with chronic sepsis into amyloid disease.

Vaccines may be employed to lessen the profuseness or foulness of drainage, but if designed as a curative measure necessary surgical measures will be detrimentally postponed. Bismuth and petrolatum should be used in very small cavities, and only when the need of further surgery is excluded.

Of course, the surgeon is essentially at fault in that he does not follow the progress of each patient with empyema whom he operates on in the acute stage, but I dwell on this subject of empyema to emphasize that surgery properly and persistently applied is the best, if not the only means of cure. After the primary operation the patients return to you, essentially, perhaps, because the surgeon neglects to follow their convalescence. Apologetically, therefore, we ask your assistance and urge you to demand further surgical intervention when the obliteration of empyema cavities is obviously not progressing.

In the management of tuberculosis, the practitioner has ceased to look to the surgeon for help. Ten years ago, when the experimental removal of large portions of the lungs of animals was first successfully executed, we wondered if such might be possible and feasible in tuberculosis in man. Thus far, however, such is not the case. The removal of the diseased lung of man is associated with obstacles not present in the excision of the normal lung of a healthy dog. Respiratory and circulatory disturbances occur in the process of intrathoracic operating which we are struggling to interpret and overcome, and in the diseased person these complications are exaggerated. The tuberculous patients is *a priori* a poor surgical risk and the outlook for successful extirpation of tuberculous lung tissue is particularly discouraging. You read of collapsing the tuberculous lung by an extrathoracic operation, pleuropneumolysis, or the resection of numerous ribs to collapse the chest wall and, therefore, the lungs. Let us suspend such radical and dangerous experiments until we have learned more of the actual value of collapse therapy by artificial pneumothorax. We surgeons may well await your developments with this harmless method before substituting a method that is dangerous. For the present, at least, in those cases in which adhesions prevent the introduction of gases into the pleural cavity, let nature rather than ill-applied surgery take its course.

We do not regard the drainage of tuberculous cavities as a profitable surgical measure. At present writing the only justifiable mechanical procedure in pulmonary tuberculosis is collapsing the lung by the introduction of nitrogen or fluid into the pleural cavity. This treatment is carried on very properly by internists. Suffice it to say that collapse therapy has almost a specific effect in the arrest of pulmonary hemorrhage. In progressive cases with unilateral or even bilateral involvement, symptomatic relief can be expected in 40 per cent. of the cases in which collapse is conscientiously maintained. The disease is arrested in a considerable number of cases of the progressive type; 13 per cent. would not be an exaggerated estimate.

I am involved in the study of a group of cases which we have doubtless misinterpreted. We see swellings on the chest wall, generally on the anterior side. There is some fluctuation, but no redness or tenderness for many weeks. Eventually they rupture or are incised. They then discharge pus and finally a bloody, watery secretion. These swellings are called cold abscesses, tuberculosis of the ribs, and necrosis of the chest wall. Stereoscopic radiograms should be taken in each of these cases. One generally finds the shadow of a localized pleurisy in the region of the swelling. Operation performed as an excision or dissection reveals a minute fistulous opening between two ribs leading to the outer surface of the parietal pleura. The ribs are almost never necrosed. It is often impossible to find either bacilli or tuberculous tissue. Nevertheless, the conduct of the lesion in every way resembles that of a tuberculous process.

Drainage alone in these cases has no curative effect, and excision of the abscessed area alone is likewise inadequate. However—and here the internist's cooperation is imperative—free drainage or excision, plus the maintenance of the hygiene advised for tuberculosis, is the sole source of success. Either one is valueless alone, but in combination the healing of an otherwise chronic discharging focus may be effected. In other words, the treatment of the case as one primarily of tuberculous pleurisy, which time will prove to be the basis of such lesions, in conjunction with free abscess drainage, is the treatment of choice.

There are other swellings on the chest wall adherent to the ribs. These are tumors, either primary in the ribs and cartilages or extending to the tissues of the chest wall from the pleura or mediastinum, rarely from the lungs. Some practitioners are accustomed to regard such tumors as inoperable. I suggest the following routine in these cases: Examine the stereoscopic radiogram. Evidences of underlying pleurisy will suggest the tuberculous abscess just mentioned; to all external appearances these abscesses are identical at the beginning with tumors. Examine the ribs with the Roentgen ray; sometimes destruction of bone will confirm the diagnosis of malignant metastases. Study the mediastinal shadow. If there are lateral bulgings suggesting mediastinal tumor, the growth seen on the chest wall is inoperable. Lymphosarcoma is the probable diagnosis; Roentgen ray and radium are the only treatments. If, on the contrary, the intrathoracic Roentgen-ray findings are negative, an operable tumor confined to the chest wall may be confronting you. Myxochondrosarcoma of the ribs is the probable lesion. Radical removal of the tumor with the involved ribs may be performed with or without opening the underlying normal pleura. Pray do not consent to the dissection of such a growth from the ribs. It will recur. Permit only a total extirpation and see to it that despite assurances to the contrary by the surgeon, Roentgen-ray therapy is employed during convalescence. If such operations are thorough, a lively reaction is to be expected on the chart. Bloody fluid accumulates in the pleural cavity. These developments are to be expected, but are almost universally withstood, and recovery ensues.

Of all swellings on the chest wall, then, there are at least two types that are curable. A careful radiographic study of the case is imperative to determine the surgical possibilities.

In primary malignant disease of the lung itself surgery laments its incompetency. In the first or operable stages there are not sufficient symptoms to force the patient to seek medical advice. If roentgenograms are taken at the beginning of symptoms, a diffuse inoperable process may be detected. If a localized shadow is shown, it is misinterpreted generally as abscess or local pneumonitis. Expectant treatment in the hope of spontaneous drainage is employed. Meanwhile the disease progresses and at a late hour the cachexia of the patient reveals the probable diagnosis.

The removal of an early localized malignant tumor of the lung is surgically possible; but we cannot expect the internist to diagnose such tumors at the early stage. We, therefore, urge you to retaliate by ridiculing our unwillingness to perform exploratory operations within the chest as within the abdomen for diagnosis and for the determination of operability. The technic of such exploration has been perfected and yet it is not done. An exploratory thoracotomy should be a safe performance. Nothing will so promptly force us to more frequent explorations than the demands of our consulting internists.

The distressing predicament of persons with esophageal obstruction from carcinoma is a familiar picture. With the Roentgen ray and esophagoscope you make the diagnosis. Despite the recent admirable studies and investigations, the general surgeon seeks to avoid an operative fatality. In view of our present knowledge and results, we would again assure you of our conservatism. We are devoted essentially to seeking the maintenance of nutrition by early gastrostomy; second, we are learning to sidetrack the esophageal constriction, at the same time maintaining for the patient the consoling function of swallowing food. The esophagus is brought to the surface at some point above the stricture. A new esophagus is manufactured from the greater curvature of the stomach and brought subcutaneously to the upper thoracic region in close approximation to the presenting proximal end. The two are sometimes successfully connected either by suture or tubing. Then, and not until then is intrathoracic extirpation of the exophageal cancer to be considered. Radium and the Roentgen ray are first to be employed, but within a few years more successful extirpation may be recorded. In consulting with a patient thus afflicted the internist is urged to bear in mind the value of early gastrostomy, the recent successes in intrathoracic esophagoplastic surgery and the possible value of intra-esophageal radium and extrathoracic Roentgen therapy.

My title is the present status of surgery of thoracic disease. He must indeed be an optimist who reads this story with any considerable enthusiasm as to the contributions which surgery at present affords. Should this paper be followed by an address detailing the results of expectant and medicinal treatment, you then would have listened to two sad stories instead of one. In view, therefore, of our individual incompetency, is it not imperative that our energies should be applied cooperatively that the much neglected thoracic region may become the scene of greater accomplishments?

ABSTRACT OF DISCUSSION

DR. WILLY MEYER, New York: Dr. Robinson's paper reflects the view I have held for the last eight years; namely, that if abdominal disease represents a true chapter of borderland troubles, then thoracic disease does this still more. Bronchiectasis is originally and principally an affection of the bronchi. As a matter of necessity the lung parenchyma will gradually become affected, just as the tuberculous process affects the bronchial system later on.

Regarding the etiology of the trouble, there can be no doubt that in quite a number of these cases the disease is due to aspiration, particularly during general anesthesia. If a patient then gets through the aspiration pneumonia, he is still threatened with subsequent bronchiectasis; especially often is the latter complication observed after operations on tonsils or adenoids. For distinct localization, particularly in the early stages, the bronchoscope renders the greatest assistance. Today every hospital in which thoracic affections are treated ought to have on its staff a carefully trained, reliable specialist for bronchoscopy and esophagoscopy, a man who will conduct these examinations without doing harm to patients, and who is able to interpret what he sees. In the early stage a specialist may treat the case conservatively. The only cure for the advanced stage is extirpation of the diseased portion of the lung. We must learn to lessen the dangers of pneumectomy. At present a two-stage operation appears advisable. As to the surgical treatment of tuberculosis, it has been just in the patients, in whom, on account of adhesions between pulmonary and costal pleura, nitrogen-insufflation is impossible, that thoracoplasty in two or three stages has had its greatest triumphs in the hands of Sauerbruch and Wilms abroad. They were able to effect improvement or cure in 60 to 70 per cent. of consumptives, who under continued medical and hygienic treatment were hopelessly lost. Personally, I could well do extensive thoracoplasty (in bronchiectatics), under local and regionary novocain anesthesia; only now and then a whiff of a general anesthetic became necessary. So far it has been impossible in New York City to get tuberculous patients with cavity formation admitted to hospitals, but I still hope to overcome

the difficulty. If anywhere, then here, internist and surgeon must work together. Regarding the diagnosis of esophageal affections: A patient who experiences difficulty in deglutition will always first consult an internist. Let the latter then remember, that, with the single exception of the presence of an aortic aneurysm, every one of these patients represents a surgical case. The paramount necessity for carcinoma is the early establishment of the diagnosis. Here the Roentgen ray, next to esophagoscopy, promises to become of greatest help to us.

DR. FREDERICK T. LORD, Boston: As an internist I want to endorse the plea made by Dr. Robinson and by Dr. Meyer that the physician and the surgeon work together in these thoracic cases. Pulmonary abscess usually comes first under the observation of the physician on whom falls the responsibility of recognizing the nature of the process and the indications for surgical intervention. It should be appreciated that acute abscess is far more amenable to surgical treatment than chronic abscess and that by delay in the consideration of surgery a favorable opportunity for relief may be lost. Dr. Meyer referred to the frequency with which pulmonary abscess follows operation on the upper parts of the respiratory tract and this has recently impressed me also. Of 206 cases in our series, the pulmonary abscess followed the removal of tonsils or adenoids, the extraction of teeth, operations on the nasal septum or about the mouth in nineteen—or about one in every ten cases. An interval of from one to four days usually intervenes between the operation and the onset of symptoms. The right lower lobe was involved in about one half the cases. Nine patients died. This is not the only field, however, in which surgery is to be accounted a contributing cause of pulmonary disease.

About one quarter of all deaths following operations under general anesthesia are due to lung complications of which bronchopneumonia and less often lobar pneumonia are the most common and serious. The aspiration of infected blood or tissue is the usual cause of pulmonary abscess following operations on the mouth or nasopharynx, and an acute infection of the respiratory tract existing at the time of the operation is responsible for a considerable proportion of the postoperative pneumonias. It is our duty to see that due consideration is given to the indications for operation in the acute cases lest we become responsible for the progress to a less favorable chronic stage of the disease. Spontaneous recovery is to be expected in only a small number of cases. It was noted in only five of 206 cases of pulmonary abscess in our series. The usual termination of acute abscess is either in death or in permanent damage to the pulmonary tissue. In the milder acute cases, in which the pulmonary lesion is small, without marked symptoms of sepsis, with purulent and not foul sputum, without a large amount of elastic tissue or lung shreds, the usual medical treatment under close observation with the surgeon may be tried for three to four weeks. In the absence of favorable progress at the expiration of this period operation should be considered. When, on the other hand, the abscess is large, accompanied by marked symptoms of sepsis and with foul sputum and abundant lung shreds a resort to immediate operation is imperative. Vaccine treatment of abscess seems to be a futile and irrational procedure. I cannot agree with Dr. Robinson that collapse therapy is a desirable procedure in chronic lung abscess or in the treatment of pulmonary hemorrhage due to tuberculosis. Sudden death from air embolism, collapse induration of previously uninvolved parts of the lung, and extension of suppuration from the lung to the pleura by rupture of adhesions are dangers which cannot be disregarded. To these dangers is added the almost even chance of compressing the wrong side of the chest in the attempt to treat hemoptysis due to pulmonary tuberculosis by this means.

Bronchiectasis is fortunately of rare occurrence, being noted in only about one in one thousand clinical cases and five in one thousand necropsy cases in our series. Isolated saccular bronchiectasis may be found unexpectedly and treated successfully surgically. When the bronchiectasis and complicating bronchopulmonary infection is sufficiently extensive to involve one or more lobes of the lung, incision and drainage of a large cavity may ameliorate the symptoms. Pneumectomy and even lobe-excision are such desperate measures as to exclude them from serious consideration by any one anxious for other than relief or death. Regarding the treatment of acute empyema, immediate and free drainage of the pus is essential for prompt and permanent relief with the following exceptions. If the pus is sterile or contains tubercle bacilli alone, removal by thoracentesis is the procedure of choice and should be repeated at sufficiently frequent intervals to prevent the fixation of the lung in an abnormal position. Empyema complicating advanced pulmonary tuberculosis is also best treated by puncture. In patients who are gravely ill open incision and free drainage is often followed by a rapidly fatal termination and removal by thoracentesis is to be preferred as a preliminary to operation or as a life saving measure.

DR. SAMUEL JAMES MELTZER, New York: I would like to suggest the attempt to treat some cases of bronchiectasis by the following method. It is easy to introduce a tube into a bronchus, especially in that of the right side. Would it not be possible and advisable, when, for instance, the bronchiectasis is in the right lung, to introduce a tube as far as it will go, and then, after retracting it for about five millimeters, to inject a weak solution of nitrate of silver? The tube should have its opening at the end; it should not be a catheter. It may be advisable, before using the solution of nitrate of silver, to remove some of the pus from the cavity by blowing it out. The entire procedure, of course, would have to be repeated many times. I agree with Dr. Robinson that an exploratory thoracotomy, which may be followed by an operation, is indicated in many cases. I wish Dr. Robinson would tell us what he thinks of the practicability of my suggestion.

DR. SAMUEL ROBINSON, Rochester, Minn.: In reply to Dr. Meltzer's suggestion as to the advisability of irrigating the bronchial tree with solutions such as silver nitrate: Of course we look on Dr. Meltzer as the authority in intratracheal insufflation, and while I have had no experience in irrigation therapy through the intratracheal tube, Dr. Meltzer would doubtless be interested to know the recent experience which I have had during the intratracheal anesthesia of a patient with bronchiectasis. Inserting the intratracheal tube in the usual manner, suction rather than insufflation was applied to the tube, removing purulent secretion throughout the operation. Meanwhile, the anesthesia was carried on by the drop method, the intratracheal tube coming out of the corner of the mouth under the mask. Fluid has been introduced into the bronchial tree and removed by suction, but as to the therapeutic value of this procedure in bronchiectasis, I do not know.

THE USE OF CHLOROFORM IN THE FIRST STAGES OF LABOR*

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In the world at large, in hospitals and private practice, both in town and in the country, chloroform is still the anesthetic most largely used in obstetrics. It has survived many eras of criticism. In Simpson's[1] early exploitation of it some of the objections encountered were the alleged production of epilepsy, insanity and septicemia and the pious belief that it was sacrilegious to remove the sorrows of childbirth.

Later, when deaths were found to be more frequent from chloroform than from ether in surgical anesthesia, its use in obstetrics was criticized. But chloroform accidents in midwifery were almost unknown. On its own merits it prevailed again on the evidence of experience, and theories were advanced to explain an apparent special immunity in labor.

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Simpson, J. Y.: Account of a New Anesthetic, 1847.

At present we are in a period of active criticism of its use because of late chloroform poisoning with degeneration of the liver and other organs.

At an obstetric meeting a few years ago, a pathologist in discussion[2] said that chloroform was shown to have toxic effects and that in its use obstetricians were the worst offenders.

An obstetrician of wide experience in reply said that he had never seen harmful results[3] from chloroform in labor and did not believe its use was dangerous.

This expression of divergent opinions by the pathologist and the clinical observer represents fairly well the present status of this narcosis in midwifery. Very recently a tendency is shown on the part of the obstetricians to yield their position based on experience to the findings of the experimentalists. We find some hospitals have given up the use of chloroform entirely because of its late toxic effects.[4] Current medical literature shows little or nothing written in favor of chloroform in obstetrics, yet its use continues. It is time to rehabilitate or abandon it. We cannot go on with the surreptitious use of this narcosis as if it were a secret vice.

To ask the abandonment of so widely used a drug we should expect pathologic evidence proportionate to its exhibition. Choloroform has been used in labor millions of times. We could reasonably expect some worker to gather statistics showing results of some hundred necropsies in women dying from its use in normal childbirth.

H. Roulland[5] in 1910 gathered a series of reported cases of late chloroform poisoning. Among them was one by Fraenkel[6] in 1892 of a woman dying twenty days after labor with fatty degeneration of kidneys and heart. The liver was not mentioned in Fraenkel's article. There was thrombosis of the large pelvic veins and death occurred suddenly from pulmonary embolism.

In the other cases assembled by Roulland from the time of Casper[7] and Langenbeck,[8] from 1850 to 1910, the date of his article, the deaths (less than twenty) were found to follow surgical anesthesia in operations for various diseases, including suppurations of long standing.

Von Braeckel[9] reports two cases in surgical anesthesia and ascribes the liver damage to deficient glycogen.

Moran[10] reported a delayed chloroform death after labor, but the patient had previously had nephritis and had been on a restricted diet.

A careful search of medical literature does not seem to reveal the elements for a series of cases of late chloroform poisoning in obstetrics.

Meanwhile we can find the testimony of countless obstetricians whose cases combined aggregate hundreds of thousands, to the effect that they have never seen injurious results following chloroform in labor. These men have not been unmindful, but have been warned to be watchful for this sequel; for it has been frequently called to the attention of the profession at large for over sixty years.

2. Ewing: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 516.
3. Bovee: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 516.
4. Rongy: Am. Jour. Obst., 1914, lxx, 636.
5. Roulland, H.: Gynécologie, 1910, xiv, 26.
6. Fraenkel: Virchows Arch. f. path. Anat., 1892, cxxvii, 381.
7. Casper: Casper's Wchnschr., 1850.
8. Langenbeck: Quoting from Berend's Chloroform Casuistik, 1850.
9. Von Braeckel: Samml. klin. Vortr., 1913, No. 674.
10. Moran: Tr. Wash. Obst. Soc., Am. Jour. Obst., 1910, lxi, 512.

After the report of the Hyderabad Chloroform Commission[11] a controversy raged, in which apparently everything that could be said about chloroform was published. Lawrie[12] showed a series of 45,000 chloroform anesthesias without a death. Patrick Hehir[13] reported giving chloroform continuously for over twelve hours in three cases of eclampsia, with recovery. Although every unfavorable narcosis event in contemporary medicine was also brought to light, it is noteworthy that no untoward occurrence was mentioned concerning chloroform in labor.

More recently Eisenberg[14] reported no late injurious effects even in prolonged obstetric chloroform anesthesias and advocated its extensive employment in labor.[15]

Leading obstetricians and practitioners of wide experience, such as Georghi,[16] Engel,[17] Veit,[18] Tissier,[19] Müller,[20] Flammer[21] and Buxton,[22] all bear favorable testimony based on extensive clinical material.

With the overwhelming clinical evidence of safety on the one hand and the scant pathologic findings on the other, it is apparent that some other factor must have caused the obstetricians to distrust their time-honored anesthetic. This has arisen from animal experimentation.

The earlier work of Nothnagel,[23] Thiem and Fischer[24] and others does not seem to have had much influence on clinicians. We begin to see a certain reflection in obstetric juornals from the observations of Doyen and Billet[25] and particularly of John Howland and A. N. Richards,[26] who made numerous experiments in chloroforming animals, revealing subsequent changes in the liver and kidneys. Whipple and Sperry[27] did similar work. Fischler[28] produced the lesions, but ascribed only an indirect influence to chloroform. Clark[29] showed that pregnant animals have no special immunity to chloroform poisoning.

Donzelli,[30] Delbert, Herrenschmidt and Beauvy,[31] C. Oliva,[32] G. S. Graham[33] and others have made a special study of changes in the suprarenals.

Evarts Graham,[34] in a particularly convincing work, has produced necrosis in guinea-pigs and dogs, and has shown that the damage takes place through the liberation of hydrochloric acid. He has found that when alkalies are simultaneously administered the destructive effects of chloroform are inhibited.

Most of the experimentalists who have shown changes in the organs have called attention to the extremely rapid and complete regeneration which takes place, the tissues appearing normal in a few days.

11. Lancet, London, 1890, i, 149.
12. Lawrie: Lancet, London, 1890, i, 174.
13. Hehir, Patrick: Med. Chronicle, June, 1891, xiv, 179.
14. Eisenberg: Wien. klin. Wchnschr., 1910, xxx, 209.
15. Eisenberg: Zentralbl. f. Gynäk., 1910, xxxiv, 689.
16. Georghiu: Zentralbl. f. Gynäk., 1910, xxxiv, 888.
17. Engel: Zentralbl. f. Gynäk., 1909, xxxiii, 496.
18. Veit: Therap. Monatsh., December, 1908.
19. Tissier: Zentralbl. f. Gynäk., 1909, xxxi, 54.
20. Müller: Zentralbl. f. Gynäk., 1906, xxx, 502.
21. Flammer: La narcose theorie et pratique, Paris, 1913, p. 221.
22. Buxton: Anesthetics, Their Use and Administration, Ed. 5, Philadelphia, 1914.
23. Nothnagel: Berl. klin. Wchnschr., 1866, iii, p. 111, p. 31, p. 367.
24. Thiem and Fischer: Deutsch. med. Ztg. 1889, p. 1111.
25. Doyen and Billet: Jour. de phys. et de path. gén., 1905, vii, 639.
26. Howland, John, and Richards, A. N.: Jour. Exper. Med., 1909, xi, 344.
27. Whipple and Sperry: Bull. Johns Hopkins Hosp., 1909, xx, 278.
28. Fischler: Mitt. a d. Grenzgeb. d. Med. u. Chir., 1913, xxvi, 553.
29. Clark: Glasgow Med. Jour., 1914, lxxxi, 33.
30. Donzelli: Arch. di farmacologia sper., 1911, xi, 51.
31. Delbert, Herrenschmidt and Beauvy: Rev. de chir., 1912, xlv, 544.
32. Oliva, C.: Tr. Int. Cong. Med., 1913, Subsection 7, B, Part 2, p. 167.
33. Graham, G. S.: Jour. Med. Research, 1916, xxxiv, 241.
34. Graham, Evarts: Jour. Exper. Med., 1915, xxii, 48.

Lengeman[35] found that by using a special apparatus which permitted the administration of the minimum of diluted chloroform vapor necessary to keep dogs in anesthesia he did not usually succeed in producing the changes in the liver which had been found by others. In how far is this experimental work applicable to practical obstetrics?

It occurred to me that full surgical anesthesia, more or less prolonged and often repeated on successive days, as done by the experimentalists who report these findings, does not represent the narcosis commonly used in obstetrics.

I determined to give chloroform to animals in a manner imitating its administration in obstetrics and watch the results. Dogs and guinea-pigs were anesthetized in the following manner:

The animal was strapped to a board and given chloroform[36] from a mask for thirty seconds (the period representing a labor pain). This was repeated every four minutes for two hours, every three minutes for one hour, every two minutes for one hour and then the animal was continuously anesthetized for a half hour. Some of the animals received the anesthetic for one hour less than that and the complete final anesthesia was omitted.

The animals were killed at intervals of two, four and six days and the livers examined. Contrary to my expectation, the same changes in the liver were found as described by Howland, Graham and others, as well as the same tendency to rapid regeneration.

The study of these experiments, however, seemed to furnish the key to the mystery. It explained how women may be given chloroform in labor and never show symptoms or come to necropsy while dogs and guinea-pigs certainly suffer pathologic changes, at least temporarily.

Although planned theoretically to imitate the narcosis of childbirth, my anesthetization of these animals did not in fact resemble it at all. The animals were strapped to boards, where they strained for a considerable period until finally they became drowsy from exhaustion or somnolent from the effect of the anesthetic. One 15-pound dog was given at times 25 drops at a dose on a closely fitting mask to obtain some semblance of quietude. There was no euphoria in these animals.

A woman in labor has suffered pains and fears their return. She believes chloroform will give relief. She receives an adequate inhalation during a pain. This is repeated with other pains. She anticipates relief from chloroform. All the forces of suggestion are at work. The wonderful relief from small doses is due in a small part to its analgesic effect, in much larger part to a sort of hypnotism.

CASE 1.—Mrs. M., tripara, weight 155 pounds, was exceedingly nervous and hyperesthetic. There were slight pains beginning 3 a. m., which became regular and hard at 5 a. m. Cervix three fingers. Suffering intensely. Began chloroform at 5:07, 7 drops on mask applied for thirty seconds. Pains every two minutes. Seven drops of chloroform with each pain. Patient in perfect analgesia. Pituitary extract ½ ampule given. Eleven more pains up to 5:48. Pituitary extract ½ ampule given. Five more pains up to 6:05, when patient was delivered. Fifteen drops instead of 7 at each pain for each of last three expulsive pains. Weight of child, 8 pounds 4 ounces. Total chloroform 185 drops.

Guinea-pig No. 1 in my series weighing ½ pound received 112 drops of chloroform on a more closely fitting mask in its theoretical analgesia.

CASE 2.—Mrs. H., primipara, aged 32, weight 138 pounds. Labor began 6 a. m. Examined 9 a. m., external os 1 finger, cervix 2 cm. long. Head at brim, left occipito-anterior presentation, pains every four minutes, lasting fifteen seconds. Weak contractions, no suffering. Membranes ruptured spontaneously at 11:10. Pains irregular, short, intensely painful. Practically no increase in dilatation. Patient neurotic, became hysterical. Chloroform with each pain beginning 11:50. Pituitary extract ½ ampule. Contractions improved, patient in agreeable analgesia. Pituitary extract ½ ampule repeated every twenty-five minutes. Chloroform continued 5 to 10 drops at each pain. Contractions lasted from thirty to forty seconds, but chloroform mask held to face only during height of pain, usually twenty seconds. At 2:05 dilatation complete, pains every two minutes. Strong contractions, well sustained. Pains more powerful, intermission one minute. At 2:45 head on perineum. Full anesthesia. Delivered at 2:57. Placenta 3:05. Total pituitary extract 4 ampules. Total chloroform 500 drops.

Dog No. 2 in my experiment, weight 15¾ pounds, received 635 drops of chloroform. Struggling and howling except during last forty minutes of three hour narcosis.

I am convinced that there is no parallel in the giving of small doses of chloroform during labor pains to a woman and the experimental anesthesias of animals on which the condemnation of chloroform is based.

The legitimacy of applying to the human subject the results produced in laboratory animals has often been contested. There is a great variation in susceptibility to given poisons and toxins among different kinds of animals. It may be assumed that human beings may differ from other animals in susceptibility to poisoning by this drug.

Certainly the large doses of chloroform in proportion to the weight given to a fear-exhausted animal are not comparable with the whiffs of chloroform given to a healthy woman in a cheerful and receptive frame of mind.

I have never seen any symptoms due to this narcosis, the so-called chloroform *à la reine*, and am inclined to take a position based on the evidence of the numerous competent clinical observers who have reported favorably on it from their actual experience.

If we are reluctant to ignore the effects shown in animal experiments, we can accept the findings of the recent work of Evarts Graham.[34] He has shown that alkalies administered along with chloroform inhibit its toxic effects on animals. If we are giving a protracted anesthesia, we can give alkalies.

The experiments of Marshall and Rowntree[37] and others showing decreased fibrinogen in the blood of animals from chloroform anesthesia are open to the same objection as the other experimental findings as having no proved application to human beings.

There have been objections to the use of chloroform in the second stage of labor on the ground that it weakens contractions and delays progress. For the same reasons it is practically forbidden during the first stage of labor by most textbook writers.

There are many cases, however, in which chloroform greatly shortens labor by relieving suffering and encouraging voluntary expulsive efforts in the second stage. Every accoucheur has seen patients who were making no progress, suddenly delivered with the

35. Lengeman: Beitr. z. klin. Chir., 1900, xxvii, 805.

36. These experiments were performed in the laboratory of Dr. Seymour Oppenheimer and in the Pathological Laboratory of the College of Physicians and Surgeons of New York. The sections were prepared and studied by Dr. Mark Gottlieb.

37. Marshall and Rowntree: Jour. Exper. Med., 1915, xxii, 333.

administration of chloroform, while preparations were under way for forceps extraction.

A number of authorities, among them Galabin [38] and Eisenberg [14] approve of chloroform for certain cases in the first stage. Newell [39] recommended anesthesia in the first stage for various indications but used ether.

In 1855 Edward William Murphy[40] wrote of chloroform as follows:

> There is one condition of the cervix uteri in which I have given it with great advantage in the first stage of labor. The neck of the womb is sometimes caught and greatly compressed between the head and pelvis. The pain is excruciating and the action of the uterus is often deranged or suspended, the woman cannot endure her agony and her strong apprehensions interrupt the pains. Let her have chloroform and she becomes tranquil, the action of the uterus returns regularly and the dilation is soon completed. Under such circumstances I have given chloroform when the mouth of the womb was not opened more than a sixpence and was gratified to find the dilatation advance more rapidly.

In my experience practically all objections to chloroform on the ground of delaying contractions have disappeared since I have been using pituitary extract.

Bandler [41] reports that more pituitary extract is necessary when chloroform is used. There need be no objection on that ground. A small percentage of each agent may be neutralized by the other. At all events using ½ ampule of pituitary extract every twenty-five minutes during the administration of chloroform in small doses at each pain I find that labor progresses rapidly.

In fact the labor is so short that the total period during which chloroform need be given must relieve the anxiety of those who fear its use.

Many patients, particularly multiparas, do not need an anesthetic at any time during labor. Some require it only at the final expulsion. But there must be no arbitrary rule as to when it should be begun. The time to administer chloroform is not at two hours or at fifteen minutes before the expected end of labor. It is when the patient begins to be unequal to the suffering. Hold the morale of the patient. Keep the pain within the limits of her fortitude. Have her inspired with her efforts and assured of your assistance if the suffering is too great. She will not be the worse for such consciousness of pain as she has borne easily and willingly. She will not regret amnesia, but will remember with satisfaction her share in the victory. A very little chloroform in the early periods of labor will be sufficient to control the patient and secure her tranquil cooperation. It is a fortunate circumstance that the neurotic women, who are most likely to need early analgesia, are also most amenable to suggestion and on small doses are brought into the semihypnotic state.[42]

It is not within the scope of this paper to make a comparison between chloroform and various other agents. Ether, nitrous oxid alone, nitrous oxid and oxygen, and scopolamin and morphin all have adherents. Some of these narcoses have just begun to arouse interest. Others have attained a great popularity which is already subsiding.

My purpose has been to seek reassurance for the many who find chloroform satisfactory. I wish to emphasize the fact that chloroform in normal childbirth produces a distinct anesthesia in which its effects are strengthened and supplemented by the influence of suggestion.

The use of pituitary extract with chloroform by greatly shortening the labor further restricts the dosage of the anesthetic and modifies the rôle played heretofore by chloroform in labor cases.

The question of remote poisoning is not new, but has been before the profession for more than half a century. Late developments in labor cases in which chloroform was used have necessarily been watched by many competent obstetricians, yet there is practically no incontestable evidence of late poisoning in normal women in labor.

There is no parallel between animal experimentation on which the late toxic effect of chloroform is alleged and its use in normal obstetrics.

38. Galabin and Blacker: The Practice of Midwifery, New York, The Macmillan Company, 1910, p. 315.
39. Newell: Surg., Gynec. and Obst., 1906, iii, 126.
40. Murphy, Walton and Maberly: Chloroform in Childbirth, London, 1855.
41. Bandler: Am. Jour. Obst., 1916, lxxiii, 77.
42. Hallauer: Deutsch. med. Wchnschr., 1910, xxxvi, 263.

ABSTRACT OF DISCUSSION

Dr. C. H. Davis, Chicago: In view of Graham's results in producing hemorrhagic disease in new-born animals together with the changes in the maternal liver, which Dr. Hill has also found present, we must still use chloroform with a degree of reserve, and especially so, since these changes do not follow the similar use of nitrous oxid or ether. Until seven years ago chloroform was used in our outpatient maternity service, but after a patient and three of us were severely poisoned from its decomposition, due to its being used in a close room in the presence of a gas jet, it was discarded in favor of ether. Graham and Woodyatt have shown experimentally that chloroform may cause acute dilatation of the stomach. Audebert collected ten puerperal cases from the French literature, and since chloroform had been used in eight, he considers it an exciting factor in causing this acute dilatation. While I will concede that chloroform may still be used to advantage in some cases, I cannot believe that with our present knowledge we are ever justified in using it as a first stage procedure or over a long period of time. With a long drawn out or painful first stage we may better use morphin or heroin, either alone or with chloral hydrate or scopolamin. For the second stage of labor nitrous oxid and oxygen has proved more satisfactory than chloroform. If nitrous oxid is not available certainly ether will answer the requirements without the danger element of chloroform. Dr. Hill's cases suggest that chloroform tends to increase the use of pituitary extract. Early in our experiments with pituitary extract four babies died shortly after birth on whom necropsy revealed no cause of death. Cases of babies dying from the excessive use of pituitary extract have been reported from German clinics. It must be used with great care and in very small doses. If chloroform has a tendency to increase the use of pituitary extract we have an even greater argument against its use than the animal experiments. Ether, I would always prefer to chloroform, but when available, nitrous oxid and oxygen because of greater efficiency and safety is the analgesic of choice.

Dr. Joseph B. De Lee, Chicago: I did not discontinue the use of chloroform because of any animal experimentation. I discontinued it, first, because of the frequency of postpartum hemorrhage after its use; and, second, because of the frequency of pneumonia after chloroform administered in close rooms with an open flame. Many times I have been made sick by the chloroform, and the patient, exposed to the same fumes, certainly suffered as much as I did. I have seen several cases of late chloroform poisoning, and death from acute yellow atrophy of the liver following the administration of chloroform. We know that choloroform has an injurious effect on the liver. For this and its other ill effects I would raise my voice very strongly against the use of chloroform in labor.

Dr. John Osborn Polak, Brooklyn: I am opposed to the use of chloroform in labor. My reasons are the same as

those of Dr. De Lee. Not only did death occur from a condition similar to acute yellow atrophy, but in these two cases there was no previous evidence of any kidney lesion. In these cases chloroform was administered by an intern, in one case the quantity being 1 ounce and 1 dram; in the other, 2 ounces and 3 drams. Both patients died on the fourth day. Necropsy showed all the liver changes found in acute yellow atrophy. Another point to be mentioned is that chloroform, like ether, like gas, like scopolamin, depends largely for its results on the one who administers it. It is not chloroform that does so much harm in minimum dosage, but the anesthetizer and repeated anesthetization. This is true also of the use of ether, of scopolamin and of morphin. The question at issue is the manner in which these drugs are to be used, and I am opposed decidedly to the dictum going out from this section that chloroform can be used with impunity in the first stage of labor, even after that first stage may be fairly well advanced. I am opposed to any routine use of it because there are sufficient data as to the serious effect of the drug to make us at least cautious in its use. With morphin and scopolamin to relieve the first stage and ether and oxygen for the second stage there is no reason why a woman may not have a painless labor without the risk of liver necrosis.

DR. E. GUSTAV ZINKE, Cincinnati: I have practiced midwifery nearly forty-two years. Chloroform was the anesthetic in use then and it held undisputed sway for many years. As a young man I gave anesthetics, chloroform and ether, hundreds of times for practitioners and surgeons of repute. Later I have had it given in my own cases as many times and oftener. For a period of fifteen years I had seen no ill effects from chloroform under any circumstances. Then, suddenly, numerous deaths from chloroform occurred, not only in Cincinnati hospitals, but the country over. Whether death was really due to chloroform was, as far as I know, never definitely determined. On one occasion I was present at a surgical operation when death took place. The difference between ether and chloroform depends much on how they are used. There is good in both. Dr. De Lee has given a good reason why he does not want to continue chloroform; but today, when we have electric lights, his objection does not obtain. The first stage of labor, under ordinary circumstances, does not require chloroform for the relief of pain. Much depends on the individual patient. As a rule, chloral hydrate or, if necessary, a hypodermic of one-fourth grain of morphin, answers the purpose.

DR. J. H. CARSTENS, Detroit: I gave chloroform for many years. I think I averaged 100 cases a year. It is unique that I did not have any trouble with chloroform. I never had a woman die during labor, nor do I remember a single case of yellow atrophy of the liver in these women, but I have seen a number of cases in consultation. I think it depends, as Dr. Polak says, on how chloroform is given. The men who do not advocate the use of chloroform are men in the hospitals who have the facilities, the assistants, by which any anesthetic can be given properly. I hold that more of your patients will die from postoperative pneumonia who have been given ether, than will die from yellow atrophy of the liver following the use of chloroform in labor. That once in a while a patient will die after chloroform, I will admit, but they also die after having been given ether. I have known them to die after "twilight sleep"! I have seen them die on the table after having been given gas and oxygen. But not any cases in labor. If you are out in the country, five miles from nowhere, with nobody in the house but the husband, and he faints and you have to take him by the collar and put him out in the snow and then come back into the house and give that woman an anesthetic all alone, and put on forceps—I would like to see anybody do it and give ether. I uphold everything that is said about ether when you have all the facilities, the anesthetist, and the assistants in the hospitals, but leave chloroform to the general practitioner who has to do the whole work. Do not rob him of that boon. He is very careful and nobody will die from its use in labor.

DR. W. P. MANTON, Detroit: Chloroform has been the ideal anesthetic in labor since 1847. I have used it in thousands of cases and up to the present time have not seen a single instance of either early or late chloroform poisoning, and many of these patients I have followed for twenty-five years and longer. I think we are too much inclined to yield our clinical experience to the experience and dicta of the pathologist and laboratory man. I quite agree with Dr. Hill that the proper administration of chloroform is quite valuable during the first stage of labor. I do not see what Dr. Zinke's experience with a death in a surgical case following the use of chloroform has to do with the use of chloroform in labor. We may all have been unfortunate enough to have lost surgical cases under chloroform, but few of us have lost confinement cases from the same anesthetic. I do not believe, either, that, if properly administered, chloroform tends to produce postpartum hemorrhage. With the uterus properly controlled after delivery of the child and placenta, I have yet to see postpartum hemorrhage, except in those cases where there is laceration of the cervical artery, and that can be remedied by a stitch. In my own practice I prefer in the first stage of labor to give the patient a hypodermic of one ampule of pantopon. In an hour, if there is no effect, she gets another dose and with that perhaps a little chloroform. In 75 per cent., if not more, of all cases, the pantopon and chloroform combination will give the patient just as good a "twilight sleep" as morphin and scopolamin, and without danger. I have used this method for a number of years without evil effect on either mother or child. I have seen two or three children slightly asphyxiated but no child has died from asphyxiation, which may have been due to pressure in a protracted labor. Now, if chloroform is such a disastrous anesthetic in childbirth, why do we, as clinicians, have so little trouble?

DR. E. GUSTAV ZINKE, Cincinnati: I have been misunderstood by Dr. Manton and lest others misunderstand me, I wish to say that I did not abandon the use of chloroform after having used it for fifteen years; but some of my friends did. I told them that I would not abandon a friend who had served me thousands of times faithfully, simply because that friend disappointed me once.

DR. H. O. MARCY, Boston: One factor in this question which has not been referred to is the effect of chloroform in overdoses on the heart. I have been told by my medical friends in Boston that if a legal case should occur claiming damage in which chloroform has been the anesthetic, its having been used with extreme care would not absolve the one employing it. In my own practice I have never seen a single case of injury from the use of chloroform. With proper use I think chloroform is usually safe. It is given as a routine anesthetic with me. It is a much more powerful drug than ether and requires careful administration.

DR. C. W. SIMPSON, Waxahachie, Tex.: I am in country practice and often deliver women without any assistance. I have to use chloroform. All other anesthetics are out of the question when one man does the operating and gives the anesthetic at the same time. I would ask those gentlemen who are writing books on obstetrics, to please, for our country practitioners' sake, put in their books a saving clause for us in using chloroform, so that when we do have an accident, and little damage suit lawyers get after us, we have some way of getting justice.

DR. CHESTER R. OGDEN, Clarksburg, W. Va.: What are we who go out from this meeting into the smaller towns and country places to do with reference to chloroform in obstetrics? Are we going to be frightened because we have heard of supposed deaths from chloroform poisoning in labor and discard it? What if there have been deaths from chloroform? Do we not have deaths from other forms of anesthesia? The good obtained from the use of chloroform by physicians practicing in the country far outweighs the possible ill effects from its use. Besides, the comparison of its use on a dog which resists, and on a woman in labor is not to be considered. I have seen no serious results that could be attributed to the use of chloroform in obstetrics. When the country physician, or those in larger places for that matter, give chloroform, they give it cautiously, in the presence of a genuine necessity and with the patient in full composure.

It seems to me that to discard chloroform in obstetrics would be working a great hardship on the physician who is attending his woman in confinement away from trained help when he meets with a difficult labor, besides taking from the suffering woman a means of tiding her over a very stormy experience. Too many of our hospital interns and so-called professional anesthetists who give ether almost exclusively, are not fit to give chloroform for the reason that they become interested in the operation and forget they are giving chloroform and pour it on as they would ether. I notice that when I am called into the country to perform an operation and depend, as I am sometimes compelled to do, on the family physician to administer ether, he has difficulty in keeping my patient asleep for the reason that his careful habits of giving chloroform slowly in labor, which usually constitute about all of his anesthesia experience, does not fit him for giving ether as an anesthetic.

Let us drop the argument against the use of chloroform in obstetrics by agreeing that its use is permissible so long as we use it with care and good judgment.

Dr. Gordon Grote Copeland, Toronto, Ont.: To me the important element in the discussion is the judicious use of chloroform in favorable cases only. I unfortunately had the experience, in working under Dr. Cragin in the Sloane Hospital in New York, of having a patient die of delayed chloroform poisoning following the careful administration of chloroform several times for a very short period. I saw the liver and kidneys at necropsy and there is no doubt in my mind but that the chloroform caused the damage. I am in accord with Dr. DeLee that, if given in too large amount, chloroform is the cause of postpartum hemorrhage. It should not be given in a case of eclampsia at all. Cragin and Hull and others have shown conclusively that it produces in the liver, kidneys and other solid organs similar changes to those seen in eclampsia and acute yellow atrophy of the liver. We ought, therefore, to discriminate carefully in the use of chloroform. Personally I am in favor of, and use, nitrous oxid and oxygen whenever possible, but these are not yet generally available for the country practitioner or in the average poor case. The practical thing to do in chloroform administration is to make a careful test of the urine. If albumin or sugar are present chloroform should not be used.

Dr. J. L. Hill, New York: Dr. Marcy called attention to the danger of sudden heart failure. Almost since Simpson's time a controversy has existed as to whether respiration or heart gave way first in chloroform deaths. The experimental work of Cathcart, Clarke, and others brings to light the state of ventricular fibrillation in these cases of shock during incomplete anesthesia. But these deaths from shock occur in incomplete anesthesia in surgery. This incomplete surgical anesthesia in which the patient only partly narcotized is subjected to severe shock differs from the analgesia with chloroform in labor. Awaiting a surgical operation the patient is terrified and when only partly anesthetized is particularly susceptible to shock. In obstetric analgesia the patient's mind is at ease and suggestion plays an important part, so there is a lessened necessity for the anesthetic.

Dr. De Lee referred to the dangers of chloroform, but reported no cases occurring in labor. It has occurred to me that such observations are too generally taken from surgical experience and applied to obstetric usage of chloroform just as they are taken from animal experimentation and applied to the human. Reference was made by Dr. Copeland of Toronto to a case at Sloane Hospital in which necropsy showed liver changes. Death had followed a few slight anesthetizations. Animal experimentation has shown that repeated anesthetizations particularly predispose to this condition. But although they occurred in an obstetric hospital these were complete surgical anesthesias for minor procedures. There is a difference between repeated surgical anesthesias and the obstetric administration of a few drops of chloroform during labor just at the moment of the pain in a woman in health for no operations but simply for the analgesic effect. I do not wish to convey the idea that pituitary extract is always necessary when chloroform is used. I brought up the matter of its use with chloroform particularly because some of the advocates of pituitary extract have not favored the use of the two drugs together while I have found them to combine most favorably. I do not recommend the very general use of chloroform in the first stage of labor, but believe there are certain indications for it. I feel, moreover, that the obstetric administration of chloroform during labor tends to produce that quiet analgesic semihypnotic state which we are so anxious to obtain, and that it is better than ether for this purpose.

THE INFLUENCE OF DIET ON THE DEVELOPMENT AND HEALTH OF THE TEETH*

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The steadily increasing tendency of the teeth of all civilized races to decay is one of the remarkable facts of human pathology.

An examination of 10,500 schoolchildren of England and Scotland showed caries in 86 per cent.[1]; of 19,725 in northern Germany, 95 per cent.[2] Schoolchildren to the number of 3,236, from 7 to 14 years of age, examined by Dr. McCullough[3] of Philadelphia, showed decay or loss of 5,575 first molars and 2,188 of the other permanent teeth.

There is no doubt that our grandfathers had better teeth than we have, but the great extent of this steadily increasing process is best appreciated by investigations of our more distant ancestors.

Mummery[4] in an examination of ancient British and Anglo Saxon skulls found decay in only 15 per cent. of Anglo Saxon skulls, 2.9 per cent. of British skulls of the Stone Age, 21.8 per cent. of British skulls from the Bronze age, and 32 per cent. of British skulls from the Romano-British Age. Among uncivilized races 1.4 per cent. of Esquimaux showed decay, 3 per cent. of Maoris, 3.9 per cent. of Indians of northwestern American coast, 9.5 per cent. of North American Indians, 5.2 per cent. of Fiji islanders.

Pickerill[5] found decay in only 0.76 per cent. of 260 Maori skulls from an uncivilized age, yet Maori children brought under civilized conditions in two schools which he examined showed 15.6 per cent. of the teeth to be carious.

The importance of good teeth in the general health of the individual will hardly be questioned by any one in this section. Any new observation bearing on the subject should be of interest.

Three years ago the Department of Public Health of Seattle examined the teeth of 2,000 children from 2 to 7 years of age. The work was carried out by Dr. Mabel Seagrave in a commendably thorough and painstaking manner. Those who had been fed six months of the first year on any one form of nourishment were tabulated with results as follows:

Food	No. Examined	No. Showing Caries	Percentage of Caries
Breast milk	859	366	42.6
Cows' milk mixtures	232	102	42.9
Sweetened condensed milk	61	41	72.1

* Read before the Section on Diseases of Children at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Rose and British Dental Assn., Reports, quoted by Smale and Colyer in Diseases and Inquiries of the Teeth, p. 242.
2. Schlesswig: Holstein Dental Association, quoted by Pickerill (Footnote 5).
3. McCullough: Arch. Pediat., 1913, xxx, 43.
4. Mummery: Transactions of the Odontological Society, Vol. 11, New Series.
5. Pickerill: The Prevention of Dental Caries and Oral Sepsis, Bailliére, Tindall & Cox, London, England, 1912, p. 11.

During the past year I have enlarged these statistics by an examination of children at the Better Babies Contests, held in Seattle and Bremerton, Washington, and children seen in private and dispensary practice. My results seem to confirm the earlier statistics.

From better babies contests the following results were obtained:

Food	No. Examined	No. Showing Caries	Percentage of Caries
Breast milk	418	118	28.2
Cows' milk mixtures	102	30	29.4
Sweetened condensed milk	32	17	53.1

Of 104 cases collected from private and dispensary practice in which the children had been fed five months or longer on sweetened condensed milk, seventy-seven, or 74 per cent., showed caries of the teeth.

The significance of these statistics is that a poorly balanced diet, high in carbohydrate and low in fat, protein and mineral constituents, fed during the period in which the teeth were developing and calcifying in the jaws, seems to have rendered them doubly susceptible to decay after they erupted.

Confirmatory evidence is added by the fact that the first molar, in which the articulating surface calcifies during the first year of life, shows vastly more imperfections, faults, fissures and absence of enamel and is three times as frequently decayed as the third molar, which does not begin to calcify until the ninth year of life.

These facts emphasize the importance of a well-balanced diet during infancy. Such a diet I should consider breast milk, a properly modified cows milk, when this is unobtainable, with the early addition of vegetables, fruits and meat. Alfred Hess says that orange juice may be begun any time after the first month. Vegetables, fruits and meats, properly prepared, and given in small but increasing amounts, may safely be begun as early as the sixth or seventh month.

Such additions to the diet are valuable aids in preventing or curing rickets and spasmophylia, both of which adversely affect the development and subsequent soundness of the teeth; they make for firmer, more elastic tissues, and a more vigorous, agile and resistant child.

The second point of importance is giving early a diet which will teach the proper function of the jaws and teeth. A child raised on pap will not learn to chew its food. But if given strips of tough meat to chew the juice out of, such foods as bacon rinds, bones, tough crusts, hard breads, and, later, apples, celery, lettuce, etc., the muscles of mastication and in turn the jaws are enlarged and strengthened. More room for developing teeth is given and they are hardened, cleaned and polished after they erupt.

The third point I wish to emphasize is the prevention of decay, which may be effected through selection of food and its proper sequence during a meal. The last article eaten should be one which will cleanse the teeth and leave no sticky, carbohydrate, decay-producing residue. A tooth brush will not remove sticky pastries, cake and other carbohydrate remains from the fissures of the teeth, but meat, a green salad, celery, radish, onions, apple, orange and fibrous food generally, under the 100 to 250 pounds pressure of the healthy bite will grind such food out and the residue left, if any, will have a deturgent action toward caries. Pickerill in his exhaustive work has shown that the amount, ptyalin content and alkalinity of the saliva secreted in response to various flavors, acidity and hardness of foods varies greatly. Acid fruits produce much highly alkaline saliva, a high ptyalin content and are an ideal food with which to finish a meal.

Sim Wallace,[6] applying these principles and directing the diet from an early age in fourteen children, found at the ages of from 5 to 7 years "not one tooth showing the slightest trace of caries."

Dean Owre of the dental department of the University of Minnesota is applying this test in a few children whose diet he is directing and feels that his observation has gone far enough to convince him of the possibility of keeping teeth free from decay. He lays emphasis on the importance of giving hard food to force vigorous mastication and of sufficient "roughage" in the diet to wear down the irregularities of the articulating surfaces and prevent stagnation in the bowel.

Our Chairman, Dr. McCleave, has recognized the importance of this subject by choosing it for his Presidential address. It is my hope that this paper may assist him in arousing pediatricians who are directing the great child welfare movements to give more consideration to this phase of the work.

A PLEA FOR THE PREVENTION OF DEFORMITIES IN THE HEALING OF BURNS*

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CHICAGO

We are all familiar with the deformities following the healing of burns and the difficulties attending their subsequent correction. The relief of the bat-wing deformity following burns of the axillary region and the often severe flexion deformities of the joints of the extremities is no pleasant task for the surgeon and the improvement obtained is frequently but a painful compromise. The deformities following burns of the anterior and lateral region of the neck are also quite unpromising.

The burns on the extensor surfaces as a rule cause very little interference with function, as the movements of the unsupported joint are usually best controlled in a position of partial flexion. This keeps the extensor surface long during the healing and flexor efficiency prevents further contraction after healing.

Deep burns may affect the integrity of the structures so severely that recover of function is impossible and even amputation may be necessary. These will be treated according to the indications, the same as equally extensive traumas from other sources; but the burns I especially wish to consider are the usual ones of the so-called third degree, destroying the skin completely in some areas and leaving the deeper structures practically intact and ready to resume their function when the wound is healed.

It is with reference to this class of burns, the usual type, that I recently made the statement that "however extensive they may be, as long as they are compatible with life, healing may and should be obtained without deformity and with good function."

This refers particularly to burns of the limbs and their connections with the body and does not include

6. Wallace, Sim: The Prevention of Dental Caries, Dental Record, London, 1912, p. 51.

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

burns of the face, although it may well apply to burns of the neck.

If this position can be maintained the surgeon is thus relieved of another serious problem and the patient of much suffering from his permanent physical handicap.

The procedure is simple and aims at the prevention of the deformity by fixing the limb in the most desirable position during the process of healing and for some time thereafter to prevent subsequent contractures. I have been able to do this best with removable plaster casts applied in the early stage of healing, before contractures occur, over the proper dressing of the burn.

The elbow, wrist and fingers should be kept extended. The hip and knee should be extended with the foot at right angles to the axis of the limb, and the toes extended. For burns of the axillary region the arm should be maintained in an abducted position. In burns of the front and sides of the neck the chin must be kept high. The cast can be removed daily, the wounds dressed and the cast immediately replaced during the whole process of healing.

The fixation also directly enhances the healing by preventing injury of new tissue by movements of the limbs. It relieves the flexor muscles of their constant attempts at immobilization to prevent pain and takes away the cause of the pain.

The method as applied combines two features that are mutually helpful. One relates to the dressing of the burn itself, and the other to the application of the cast. The burn, then, is an ulcer and may be treated by skin grafting or such other methods as the surgeon has found successful, provided the limb can be maintained throughout the period of treatment in the desired position.

My method in this stage has been the application of ribbons of adhesive plaster directly on the wound and extending some distance beyond the margins for attachment to the normal skin. The ribbons are usually placed at the margin of the burned area first and then laid on in parallel strips slightly overlapping each other until the whole region is covered.

It is usually best to wait until all sloughs have separated before beginning this part of the treatment, as there is no danger of contractures occurring during this early stage. The adhesive plaster is changed two or three times a week or whenever it becomes loosened from the healthy skin. Its removal causes no pain as it does not adhere to the moist surface of the wound, and its application by gentle pressure is equally painless. By its pressure it also prevents exuberent granulations and probably reduces the amount of secretion by its influence on osmosis. Owing to its permeability it furnishes an ideal condition for healing, conserving heat and moisture the same as an unbroken scab, though it is quite impossible to maintain the latter complete over large areas. The absence of mesh also prevents the penetration of the granulations with the subsequent bleeding and pain on their removal. The inclusion of the secretion, that is, the pus, has no more deleterious effect than the same condition existing under a complete scab and is rather to be desired for its moisture than deprecated, as growth can occur only in the presence of moisture, even under the scab. It is much more efficient than the scab over large areas. It is really a wet dressing with the moisture consisting of the patient's own serum plus the ever present bacteria.

Over the adhesive plaster is placed a dressing of dry gauze sufficient to absorb the secretions that make their way out from under the plaster strips at various places. This is usually changed daily, and as it does not come in contact with the wound, its removal is also painless. Over this is made the circular plaster cast which is afterward opened at convenient places for daily removal for changes of dressing. For the limbs it is usually made bivalve. For the other regions it is cut as ingenuity suggests for its removal and reapplication.

After healing is obtained, night casts closely fitting the parts are made and these are worn for several months, usually at night only, as long as there is a tendency to deformity. Persistent use of the after-treatment is essential to permanent success.

With the proper use of this method the deformities of limbs following this type of burns need no longer occur, and, indeed, their presence must be a reproach to the surgeon responsible for their development.

ABSTRACT OF DISCUSSION

DR. J. P. LORD, Omaha: The first function of the orthopedic surgeon is to prevent deformity. Dr. Parker's paper is therefore opportune. Though not strictly new, we are indebted to him for emphasizing this particular method of preventing deformity. His use of plaster of Paris seems desirable. The mere mention of splints in surgical textbooks is not sufficient to bring the matter to the attention of any class of doctors. The time of healing should be conserved by timely early skin-grafting. We should hasten healing even by the early excision of eschars and deep sloughs when indicated. Tissues that have been so deeply burned as to be destroyed should be removed early, to lessen the period of sepsis and hasten the period at which skin-grafting may be resorted to. Such tissue should be excised, and its place covered with a skin-graft or a skin-flap. Otherwise contractures will be invited. There is going to be a tendency to contraction if a number of weeks or months are consumed in the healing of the wounds, because a large amount of connective tissue is formed, and this has the inherent quality of contraction, weeks or months after healing has taken place. The present tendency in general surgery is to get these wounds covered by skin at the earliest possible date, and it has been my experience that it is best when possible to use whole flaps of skin and subcutaneous fat in the more extreme cases. It is my observation that long periods of healing in these cases are quite unnecessary. The securing of straight members at first is not sufficient to prevent the deformity that is bound to take place subsequestly. Early grafting or plastic repair should be applied to flexures of the limbs to secure a more flexible and pliable condition, and one more free from the dangers of subsequent contraction, than it would be after a number of months of healing by granulation under any method. Another reason for the early covering of these suppurating areas with skin-grafts is to prevent the occurrence of intercurrent diseases, to which they are an easy prey in the patient's weakened condition from prolonged suppuration. I would, therefore, sound a warning against a too thorough application of the methods of Dr. Parker and favor lessening the period of healing by application of the resources of surgery.

DR. CHARLES M. JACOBS, Chicago: I should like to bring out, as a point of interest, that this method of applying adhesive strips may be used not only in cases of burns, but also on pressure sores as a result of plaster casts. At the Home for Crippled Children, balsam of Peru dressings for pressure sores have been discarded for zinc adhesive strips. The strips can be changed through windows cut out of the plaster casts.

DR. EDWIN W. RYERSON, Chicago: I have seen some of Dr. Parker's work, and consider it better than anything I

have seen in the past. Even if skin-grafts be applied, as suggested by Dr. Lord, none the less should we use apparatus of this kind, because skin-grafts often tend to contract, and one may be disappointed in the result after skin-grafting unless such precautions are taken. The method advised by Tubby to relieve this contraction should receive more attention than it apparently has in this country. I have had occasion to use it in a few cases. The results are excellent, and one obtains a pliable scar that does not tend to recontract.

DR. CHARLES A. PARKER, Chicago: I have taken up only one phase of the subject. The treatment of the burn is the treatment of the ulcer, and you can treat it as such. If you know how to treat ulcers well, you can take care of burns. You do not need a lot of literature, but plenty of adhesive plaster and some grains of common sense. I am much more proud of the two boys that had the straight legs and never had any contractures than I am of the ones that I had to straighten afterward. The skin-grafting is all right, but I have been taking care of a boy whose burns after four years of skin-grafting, never were healed. Auto-skin-grafting is all right as far as it goes, but when you have a little girl with so much burn that there is not enough skin left on the patient to take grafts from, what are you going to do? The patients do badly in extensive burns with skin grafts. I get that information from the general surgeon, because I get his cases to treat afterward. It is proper to use skin-grafting when it can be done, but when you come to heal up a wound like that in this boy and get it cured in fourteen months with a straight leg, it is something worth while.

Removal of the eschar is advised by German surgeons. Unfortunately, people who read German think that everything that comes from Germany is good. That, I think, is one of the objections to being able to read German. In the case of a child burned like that, not one of you would do it. He has a hard struggle to live at all. There may be cases in which it is advisable, but not in very large burns. As to overcoming these contracted scars, it does require several months, any way, depending on what the tendency to contracture is. I have seen the scars quit their tendency to contract after some months, but some go on for much longer. Nevertheless, scars do give up this tendency. They sometimes give up when you wish they would hold. We know now that scars of the esophagus give up. I have seen scars from drinking lye do this. So it is in the scar from the effects of a burn. You get scars, of course; but you get the most rapid healing and the smallest amount of subcutaneous scar tissue possible, with no destruction of skin that you have made one day by see-sawing and stretching it out the next. Hold the fingers out straight while they are healing, and there will be no necessity for skin grafts.

Age and Accomplishment

"But why, you ask me, should this tale be told
To men grown old, or growing old?
It is too late! Ah, nothing is too late
Till the tired heart shall cease to palpitate.
Cato learned Greek at 80; Sophocles
Wrote his grand Oedipus, and Simonides
Bore off the prize of verse from his compeers
When each had numbered more than fourscore years.
And Theophrastus, at fourscore and ten,
Had but begun his 'Characters of Men.'
Chaucer at Woodstock with the nightingales
At 60 wrote the 'Canterbury Tales.'
Goethe at Weimar, toiling to the last,
Completed 'Faust' when 80 years were past.
These are indeed exceptions, but they show
How far the gulf stream of our youth may flow
Into the arctic regions of our lives,
Where little else than life survives."

—Longfellow.

SHEET RUBBER SUPERIOR TO GAUZE SPONGES IN ABDOMINAL OPERATIONS *

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It has been said that as long as surgery remains an art sponges will be overlooked and unintentionally left in the abdominal cavity. Yet I believe the day is coming when we will not place a sponge, clamp or any other instrument wholly within the abdomen.

The ablest surgeons the world has known have had the misfortune to have left a sponge, a drainage tube or an instrument in some cavity of the body.

The possibility of leaving a sponge in the abdominal cavity has been a source of anxiety to every surgeon, and although we have devised numerous methods to avoid this accident, the human element is always present, and must be reckoned with, and alas, too often this unfortunate accident takes place.

The man who has to bear the stress of the unexpected calamities that occur in surgery realizes how easy it is to leave a foreign body in the abdominal cavity; while the layman, who so little appreciates the situation, invariably states that it is criminal negligence to leave gauze, a drainage tube or a part of the surgeon's armamentarium in the patient's anatomy.

Neugebauer, Schachner,[1] Kretschmer, Crossen and others have collected from the literature about 300 cases of foreign bodies left unintentionally in the cavities or tissues of the body.

The number of times that this accident has happened will never be known. Death may have taken place as the result of an overlooked sponge, and the cause may never have been suspected. Many cases never come to necropsy, while several necropsies revealed a sponge in the abdominal cavity, although the sponge had not been missed by the operator. Surgeons hesitate to report these cases, fearing the loss of reputation, and the modern tendency to suits for damages.

Among the causes of this accident may be enumerated faulty anesthesia, absence of good light, unfavorable position of the patient, operating in the home and without the regular assistant, deep-seated operations, the occurrence of profuse bleeding, and unusual complications arising during the course of an operation. Many instances occurred in operations for extra-uterine pregnancy. Sponges have been found following operation on the thyroid, breast and thigh, and even operations for hernia and suprapubic operations on the bladder.

Sponges and clamps have wandered into the bowels and have been passed by rectum. It seems incredible, yet it has happened, that a yard of gauze has been left in the abdominal cavity and later removed from the rectum. A foreign body has been known to have remained in the abdominal cavity for years and caused no inconvenience. A sponge was passed after a lapse of twelve years, and a forceps after four years.

Dr. Edouard Martin[2] of Berlin makes comment on a decision of the superior court of Germany, July, 1913. Foreign bodies, namely, a gauze compress, a

* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Schachner: Ann. Surg., 1901, xxxiv, 499, 679.
2. Martin, Edouard: Deutsch. med. Wchnschr., Jan. 21, 1915, p. 108; ibid., Jan. 28, 1915, p. 137.

broken piece of sponge and a clamp were left during an operation. The court held that the surgeon was not responsible if he had used the safeguards which are usually employed; claiming that the accident was due to the human element, which must of necessity enter all cases.

In a later decision by the court, concerning an appendix operation with local anesthesia, in which were adhesions and free pus, a compress was left in the wound. The patient was a witness in his own behalf. The surgeon was found guilty of negligence.

The court held that if some unusual accident occurred during the operation, such as hemorrhage, the leaving of a sponge might be excused.

The patient was ten weeks at the hospital, five weeks in bed. In the operation a pus appendix was removed in two pieces, and the wound was drained. A gauze sponge was accidentally left in the wound. Narcosis was given five weeks after operation, and the wound was examined; the gauze was not found. Three months later a gauze strip was removed, and the wound then healed.

At the first trial of the case the court decided in favor of the doctor, who was sued for 12,000 marks. The court held that if, in spite of all precautions, injury occurs to the patient, it is an oversight, on the part of the surgeon, but not a culpable one.

On appeal to the highest court of the country, the patient was awarded a verdict of 40,000 marks. The testimony showed that the most conscientious and eminent surgeons have had these accidents. The patient testified that he had full consciousness and that he saw all that happened, and that the operation went along smoothly without any unusual occurrence.

The diary of the operating room stated that there were adhesions, pus, and an appendix was removed in two parts, but said nothing about complications. This emphasizes the value of taking careful notes at the time of the operation.

The court decided that to leave a foreign body was not allowable by an expert. The supreme court held that if you cannot show that something unusual happened during an operation you are liable. The court also stated that a way must be found to prevent gauze slipping into the wound.

The defendant claimed that the patient was responsible, because he saw the sponge put in, and as he saw everything that took place, he should have asked that the sponge be removed. It is of interest to note that a man under local anesthesia may be a witness

CASES OF OBJECTS LEFT IN WOUND AFTER SURGICAL OPERATION

No.	Where and by Whom Reported	Operator	Character of Operation	Article Lost	When and How Removed	Result
241	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Herniotomy.....	Gauze.....	Two and a half years later; removed by forceps from scrotum	Recovery
242	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Goiter.....	Gauze sponge...	Six weeks later found in curetting fistulous tract	Recovery
243	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Goiter.....	Gauze.....	One and a half years later pulled from fistulous tract	Recovery
244	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Suprapubic cystotomy	Gauze strip.....	Six weeks later removed from fistula on dressing wound	Recovery
245	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Suprapubic cystotomy	Gauze sponge...	Several years later; suprapubic cystotomy	Recovery
246	Kretschmer: Ann. Surg., 1909, xl, 814	?.....	Osteomyelitis of femur	Metal probe....	Sometime later, detail not given....	?
247	Kretschmer: THE JOURNAL A. M. A., Oct. 9, 1909, p. 1229	Willis.....	For ovaritis.....	Surgical sponge	Thirty days later, discovered through part of original opening in abdomen	?
248	Kretschmer: THE JOURNAL A. M. A., Dec. 11, 1909, p. 2203	Smith.....	Laparotomy.....	Sponge.....	Ten months later; details not given	?
249	Kretschmer: THE JOURNAL A. M. A., March 12, 1910, p. 906	Ruth.....	Appendicitis.....	Gauze pad.....	Ninety-eight days; later laparotomy	Recovery
250	Robb: Cleveland Med. Jour., 1910, ix, 434	Robb.....	Abdominal section...	Gauze sponge...	Nine months later; abdominal section	Recovery
251	Maylard: Lancet, London, Feb. 28, 1914, p. 608	Maylard.....	Gallstone.....	Gauze.....	Two weeks; laparotomy.....	Recovery
252	Hinterstoisser: Wien. klin. Wehnschr., April 18, 1912, p. 589	Hinterstoisser.	Extra-uterine pregnancy	Gauze compress	Four months later; laparotomy was performed for tumor mass	?
253	Hinterstoisser: Wien. klin. Wehnschr., April 18, 1912, p. 589	Hinterstoisser.	Total extirpation of uterus	Sponge.....	Fifty-one days later; sponge was pulled out with forceps through vagina	?
254	Hinterstoisser: THE JOURNAL A. M. A., Feb. 17, 1912, p. 511	Johnson.....	?.....	Gauze.....	Details not given except that gauze was left in abdomen at operation	?
255	Furniss: THE JOURNAL A. M. A., March 22, 1913, p. 879	?.....	Dubrssen operation...	Two sponges....	Five months later; one removed from bladder eight months later, other removed from vagina	Recovery
256	Furniss: THE JOURNAL A. M. A., Dec. 6, 1913, p. 2094	Humiston.....	?.....	Gauze sponge...	Six months later, details not given except that sponge was left in abdomen	?
257	Stoeckel: Ztschr. f. gynäk. Urol., January, 1913, p. 38	?.....	Prolapsed uterus.....	Gauze compress	Cystitis developed; colpocystotomy necessary to remove supposed calculus, which proved to be gauze compress	Recovery
258	Stoeckel: THE JOURNAL A. M. A., Jan. 10, 1914, p. 154	Kerr.....	Tuberculous peritonitis	Sponge.....	Nine months later; laparotomy....	Recovery
259	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Gerich.....	Monocystic ovarian cyst	Gauze compress	Eight months later when fistula, which had developed, was operated on	Recovery
260	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Doleris.....	Cesarean section.....	Sponge.....	Details not given.....	Recovery
261	Gerich: Zentralbl. f. Gynäk., March 28, 1914, p. 474	Dallinger.....	Sarcoma.....	Artery clamp...	Two and three quarter years later; operation after they had been noticed in abscess found in abdominal scar	Death
262	Kuntzsch: Zentralbl. f. Gynäk., Jan. 31, 1914, p. 199	?.....	Placental polyps.....	Gauze.....	About ten months later at a normal birth, gauze was pushed out with head of fetus	Recovery
263	Kuntzsch: THE JOURNAL A. M. A., Sept. 4, 1915, p. 900	Berry.....	Removal of ovaries...	Sponges.....	Details not given.....	Death
264	Kuntzsch: THE JOURNAL A. M. A., Dec. 11, 1915, p. 2113	Holbrook.....	Appendicitis.....	Sponge.....	Nearly a year; details not given....	?
265	Kuntzsch: THE JOURNAL A. M. A., May 6, 1916, p. 1489	Brand.....	Removal of ovaries...	Gauze pad.....	Pad missed by nurse after incision was closed; later reopened and pad removed	Death

against the surgeon. How much must be done and what to satisfy what is called necessary care?

Some surgeons have had patients sign papers waiving their rights to sue and thus protect the surgeon against damage suits. The legal value of the above is, however, doubtful. It was argued that it could not be gross carelessness, but an oversight, which is excusable.

The imperfections of all human acts was dwelt on as well as unexplainable happenings. After the act it is easy to criticize, as the excitement of the moment has ceased. We should consider all the difficulties and impediments with which the surgeon has to deal.

Each case should be decided by itself. We should not demand infallibility. The best and most advanced surgeons have made mistakes. There is as yet no method commonly adopted. Incidents may happen during an operation, so that the attention may be diverted and a sponge in the cavity be forgotten.

I report in the accompanying table the cases taken from the literature, adding these to Crossen's collection.

CASE 1.—The first case to come under my personal observation of sponges being left in the abdominal cavity was that of a man operated on for gallstones by one of the leading surgeons of New York. I happened to be present at the operation as a spectator. Sea sponges were used, and these sponges were torn into small pieces and held by sponge holders. There was no attempt made to keep count of them, and there must have been at least two hundred pieces scattered on the floor of the operating room at the close of the operation.

The patient rallied from the operation, and in about five weeks left the hospital for his home in a distant city. He continued to have rise in temperature, and two weeks after arriving home, he was again operated on by another surgeon. There were no sea sponges used at this second operation, but ten days later an abscess broke into the wound and four pieces of sponge used at the primary operation were removed. The patient died within two months.

CASE 2.—The second patient was operated on at the Rhode Island Hospital by a colleague of mine. The patient was a man of about 30 years of age who had received a stab wound of the abdomen, just to the left of the navel. There was some bleeding from vessels of the mesentery, which was checked with ligatures, and the wound was closed without drainage.

Two years later this man was admitted to my service at the Rhode Island Hospital. He had a movable mass about the size of a hen's egg which could be felt through the thin abdominal wall. On opening the abdomen we found this mass involved the omentum. The tumor was removed, and the severed vessels in the mesentery were ligated.

After the operation, the specimen removed was examined, and it consisted of a gauze sponge rolled into a small ball, completely covered with omentum; the omentum had wrapped itself entirely about the sponge. There were no adhesions to the abdominal wall or to the intestine.

CASE 3.—This was the case of a woman operated on for the removal of a small ovarian cyst. A nurse, whose sole duty it was to count and take care of the sponges used in the operation, and who was an exceptionally intelligent and conscientious woman, was assigned to this case. Just before the abdominal wound was to be closed, the sponge count was asked for and found to be correct; but while closing the abdominal wound the anesthetist allowed the patient to come partly out of the anesthesia, and as the intestine appeared in the wound, a sponge was asked for and placed over the intestine, just beneath the wound.

The wound was then closed, and neither the operator, his assistant, nor several physicians who were looking on at the operation, nor the nurse who had charge of the sponges again thought of the sponge placed in the abdominal cavity.

The fact that the count had been asked for, and was satisfactory, seemed to relieve the minds of all interested in the operation.

Twenty-six hours after the operation the patient had some rise in pulse and temperature. The probable cause of her condition was considered by the operator, assistant and the nurse who had charge of the sponges; each one, separately, recollected the placing of the sponge and leaving it in the abdominal cavity.

The patient was again anesthetized, the wound opened and the sponge, found just beneath the abdominal wall, was removed. The patient then made an uninterrupted recovery.

Since witnessing this accident I never have relied on any one to take charge of the sponges. I am no longer annoyed with the counting of sponges and with the discussions by nurses and doctors as to whether a sponge was lost in the abdominal cavity or thrown away.

The methods now in use to avoid the accident of leaving a sponge or instrument in the tissues are as follows: counting the sponges before and after the operation, by one, two, or even three individuals; attaching tapes to the gauze pads and a clamp bead or metal disk to the tape, using large pads or strips of gauze, and as few as possible; tying together gauze drains, when several are used; the use of four or five long gauze strips, kept in bags, which are attached to the laparotomy sheet near the wound.

The only sure way to prevent sponges being left in the abdominal cavity during an operation is not to place the sponge wholly within the abdominal cavity.

Numerous are the suits that have been brought, and in some cases verdicts for heavy damages have been rendered the complainant. In not a few instances a reputation built up by years of hard work is practically ruined by the mishap of leaving a sponge in the tissues.

Learned authorities both at home and abroad have argued pro and con as to whether the surgeon or nurse was to blame, and in some cases whether the patient was at fault, from the mere fact that he had to undergo an operation, and of necessity must assume this risk with others that attend an operation.

We owe a debt of gratitude to Yandell Henderson[3] for his remarkable experimental studies with reference to the carbon dioxid content of the blood and its relation to shock.

His experiments and deductions are of great practical value to us as surgeons. He states that from excessive pulmonary ventilation, reflexly induced by laying open the abdomen, or indeed, by any surgical operation, there results a diminution of the carbon dioxid content of the arterial blood. This is known as acapnia.

When the viscera are exposed to the air, exhalation of carbon dioxid occurs, and the local acapnia which results is a factor in the peripheral inhibition.

General acapnia from the hyperpnea and local acapnia from exposure are the initial causes of surgical shock following laparotomy.

Cloths moistened in warm saline solution and frequently changed produce local acapnia. When acapnia is prevented the forms of motility of the gastrointestinal canal are practically identical with those shown by roentgenograms of unoperated animals.

He caused to pass over the exposed viscera a gentle current of normal, moist air, and found that this treatment is a highly effective procedure for the production of shock.

3. Henderson, Yandell: Am. Jour. Physiol., 1909, xxiv, 66.

In another experiment one loop of intestine was laid in cotton wool and left untouched by the hand, during twenty minutes of warm moist aeration; while a control loop was wrapped in sheet rubber to protect it from the air, and was handled continuously for this period. Both became congested, but the former underwent by far the greater loss of tonus and motility. The carbon dioxid content of the animal's blood was then increased, and the exposed loop recovered its tonus and motility.

He thus demonstrates the value of sheet rubber as a covering for the intestine during operation, as it reduces acapnia and lessens shock.

Crile says that "when the omentum is made to cover the viscera there is much less shock." When the abdomen is opened peristalsis ceases.

Henderson found that aeration of the viscera of a bulldog for three hours lowered the arterial pressure 50 per cent. The small intestine changed color from pink to dark purple; then 200 c.c. of Ringer's solution were slowly injected into the femoral vein.

This fluid while cold had been shaken thoroughly in a flask, through which carbon dioxid was bubbled, and then had been warmed to 35 C.

Ringer's solution saturated with carbon dioxid was introduced into the peritoneal cavity and a stream of carbon dioxid gas was bubbled through this liquid from a tube inserted deep among the viscera.

At the end of twenty minutes the animal had come out of coma, arterial pressure had risen considerably and the pulse was of nearly normal amplitude. Later the viscera recovered their normal appearance and tonus.

Local acapnia due to direct exhalation of carbon dioxid is a factor in the loss of tonus in exposed viscera. Exposing the viscera to a current of air at body temperature saturated with moisture rapidly induces congestion and loss of tonus and motility.

Restoration of the body's store of carbon dioxid is effective, as a method of relief from all except the extreme stages of acapnia shock.

If the conclusions of Henderson are correct, we should no longer cover the exposed intestine with warm moist towels or gauze. Sheet rubber is far preferable. Should it be found necessary temporarily to remove loops of intestine from the abdomen, a rubber bag may be fastened to the sterile sheet near the wound, and the intestine placed in this bag.

If we can by any means lessen the risk or avoid altogether the possibility of leaving a foreign body in the abdominal cavity we should strive to do so.

During the last ten years we have been using a roll of sheet rubber, which has proved in every way satisfactory. This rubber roll is about the thickness that is used for rubber bandages. It is about 8 inches wide and 18 feet long. When the abdominal cavity is opened, folds of this rubber are tucked in the wound, walling off the intestine from the site of the operative field. A part of the rubber roll lies outside the abdominal cavity, as the entire roll is never placed wholly within the abdomen.

The edges of the wound may be covered by part of the rubber roll, thus protecting them from infection and trauma from use of retractors.

It is of equal service whether we are operating in the pelvis, on the uterus, tubes or ovaries, or whether we are excising a gallbladder or doing a gastro-enterostomy.

The work of Henderson and other observers[4] has shown us that rubber is less irritating to the intestine than gauze. I believe the use of the rubber roll to protect the intestine undoubtedly lessens the shock attending the operation, and I am quite sure that we have fewer adhesions following an operation.

The ease of sterilization of the rubber roll is important. We can as readily sterilize this roll as we can our rubber gloves, and the same roll can be used many times. I have known them to last for more than a year. After an operation the rubber is washed and while unrolled it is boiled for twenty minutes. It is then dried, powdered, and rolled into a bandage. Previous to operating it is again unrolled and then sterilized by boiling for twenty minutes. It is then rolled and placed in a hot saline solution.

A towel is folded so as to make a pocket, into which the roll of rubber is placed and the pocket is then clamped to the sterile operating sheet near the wound. During the operation as much or as little of this rubber roll can be unwound, walling off the intestine and thus protect the operative field.

Gauze sponges 18 inches long and 3 inches wide made of several thicknesses of gauze are used to wipe dry the field of operation. These sponges, however, are never placed in the abdominal cavity; but gauze amputation rolls, 6 feet by 4 inches are used.

It will be noted that few sponges are needed in any operation when the rubber roll is used, and that it is no longer necessary for us to place sponges in the abdominal cavity. The use of the rubber roll prevents the loss of the carbon dioxid content of the blood, and thereby lessens shock. It is moist and smooth and does not injure the peritoneum, thus preventing postoperative adhesions.

We are all creatures of habit, and it has so long been the custom to use gauze sponges to wall off our operative field that we are reluctant to dispense with them. I firmly believe, however, that one who has never used this rubber roll cannot appreciate the satisfaction I feel in being relieved of the annoyance of counting sponges, and the possibility of leaving a foreign body in the abdominal cavity.

ABSTRACT OF DISCUSSION

Dr. Richard R. Smith, Grand Rapids, Mich.: It is my belief that Dr. Keefe has given us a valuable hint in the technic of abdominal operations in suggesting the use of a rubber dam instead of gauze pads for walling off. He speaks at some length of the danger of leaving sponges in the abdominal cavity, and the advantage that the dam presents in doing away with this danger. Unfortunately, we have not solved the problem of leaving foreign bodies in the abdominal cavity when we do away with sponges, for instruments and needles have been left there in spite of every precaution. It seems to me that the methods employed to prevent this accident are less at fault than the organization of our operating rooms. In a carefully organized operating room this accident seldom occurs, for operations proceed in an orderly way and there is less confusion. An operating room to be well organized must have a well organized hospital behind it, so it seems to me that surgeons must go back of mere methods of dealing with technical problems, and must interest themselves in the hospital itself in order to prevent this and other accidents in the operating room. Comparing the merits of gauze pads and sponges with those of the rubber dam, it would seem that the former had some advantages. One is that the gauze adheres to the tissues with which it comes in contact, and can hold back the intestines from the field of operation better

4. Peters: Jour. South Carolina Med. Assn., 1915, xi, 16; Lancet, London, Nov. 15, 1913. Black: Railway Surg. Jour., 1915, xxi, 178

than the smooth rubber dam can possibly do. Aside from protecting the intestines from the air and the manipulation of the operator, the gauze absorbs blood and other fluids which may be septic and is a distinct advantage in this way. Its greatest disadvantage is that it traumatizes the intestines and peritoneum, adds to shock and postoperative ileus, and I believe has much to do with postoperative distention. Undoubtedly the so-called gas pains following operation are partially due to the reestablishment of peristalsis in intestines that have been traumatized by the gauze. The rubber dam has the distinct advantage of not doing this, but of leaving the intestines smooth, moist and glistening when removed. It seems to me that this advantage may offset the disadvantage that the rubber dam has in not holding back the parts so well, nor of absorbing fluid so readily. I have not personally used it sufficiently to speak further of it, but in the few cases in which I have employed it it has been satisfactory, and I am planning to give it a good trial.

DR. C. H. MAGEE, Burlington, Ia.: I wish to relate two unique cases in which foreign bodies were left in the abdominal cavity. I was dresser in the North London Hospital some years ago, and an eminent English surgeon at that time operated on a case of extra-uterine pregnancy. During the night the ligature slipped and the patient died. We were called to attend the necropsy the next morning. A few stitches were cut and a black object came into view. It was a sea sponge of the kind used at that time. This shows that such things may happen to any of us. Another case happened in a hospital in Chicago. The operator was a prominent surgeon of that city. He told us there was a cyst in the epigastrium and he would cut down and see if he could remove it. Cutting down he found a cavity, and after exploring it he put in a yard of iodoform gauze. We went into another room and soon a nurse came to the door and beckoned violently to him to come back. We went back into the hall and when we got to the patient's room I saw a sight I shall never forget. The man was vomiting, and from his mouth protruded a strip of gauze half a yard long. A big safety pin fastened the gauze to a band about his belly, or he would have vomited the strip.

DR. S. C. STREMMEL, Macomb, Ill.: In sixteen years I have left two sponges in the abdomen. I have taken out four in that time. One of the sponges that I left in protruded from the rectum and was taken out by the patient herself. It was a case of fibromyoma, with severe bleeding, and in packing in the sponges to prevent bleeding the surgical nurse failed to make her count right. That was ten years ago. Since then we have never left a sponge in, because I have my sponges made large with a tape half a yard long and another sponge at the end and that sponge never goes in. I was much impressed with this idea of the rubber, but I do not think rubber answers as well as gauze. The same thing can be accomplished with a big roll of gauze. The method we have used in the last ten years has served us well.

DR. STEPHEN E. TRACY, Philadelphia: Some weeks ago we operated on a patient with a mass in the left upper quadrant of the abdomen which had been diagnosed carcinoma of the descending colon. A rather extensive operation was performed and a large section of the colon removed. After operation the bowel portion of the specimen was split open and we were surprised to find a large abscess cavity which communicated with the bowel, and through the opening a piece of gauze projected. The patient had had an abdominal operation, supposedly for an inflammatory pelvic lesion, seventeen years before. The gauze had caused no symptoms until about six months before its removal. I agree with Dr. Smith that if a hospital is well organized and the operating room staff well trained, it will be seldom that a piece of gauze will be left in the abdomen.

DR. F. F. LAWRENCE, Columbus, Ohio: This matter of sponges causes more worries for the surgeon and more tears on the part of the patient and friends than any other one subject. The morbidity of abdominal surgery is in direct proportion to the number of sponges or yards of gauze or other things the surgeon unnecessarily puts into the abdomen. Postoperative adhesions are in direct relation to the packing in of gauze. I witnessed an operation a few days ago, a perfectly aseptic case, a little bit of an ovarian cyst, without an adhesion or other evidence of infection, and the surgeon put in four or five yards of gauze. He unnecessarily invited or courted adhesions. I often say to students that there are two things to be put into the abdomen—a clean hand, and a clean and active conscience, and to avoid putting in anything else. Retractors and sponges produce local irritation, bruising of tissues and consequently postoperative adhesions. Even in pus cases, if you will maintain intra-abdominal pressure by having an assistant press on the side of the abdomen, any pus present will be forced out and you will not need to put in sponges. You will save your patient nine times out of ten, where you would lose her seven out of ten if you pack with gauze. We should not create pathology by unnecessary traumatism.

DR. JOHN J. REYCRAFT, Petoskey, Mich.: How to get around the accident of having sponges left in the abdomen is an important question and has been given great study by me. Too many men take much time in operating and much of the time is consumed by placing in wall-off sponges. Sometimes I have seen men taking an hour in doing an operation which should be done in twenty minutes because of that very thing. If sponges must be put in do not put in small ones, large ones are better and a large aseptic towel is better than gauze and walls off the field of operation well. If there is much pus in the wound you need packing. The omentum will adhere to gauze very readily. In a case of ascites in which I had placed in the abdomen a pad of gauze to drain the fluid off I was much surprised to find after three days that its removal was most difficult. An extraordinary find in my experience was in a case following ectopic operation. The woman did not do well. A mass formed in the abdomen. The woman could not have a bowel movement without great difficulty and I deemed it advisable to do a second operation and found a large crushed gauze sponge in the lumen of the bowel. There was no possibility whatever that this could have entered only by way of the mouth or the anus. A nurse claimed that the patient had difficulty in swallowing after the operation, and as it could not well get into the ileum against peristalsis it becomes evident that the patient swallowed the sponge.

DR. JOHN W. KEEFE, Providence, R. I.: Regarding the well organized operating room as a preventive to leaving sponges in the abdomen, I may say that in one of the cases cited in the paper, we had at that time an operating room in which the same people had been working together day after day, and with a bright, conscientious nurse and yet that sponge was left in. There have been instances in which sponges or pads with the tapes attached for safety have been found within the abdomen, so that, no matter how perfect your operative technic may be, a sponge may be overlooked. It is possible that the tape may be cut during the operation and the sponge allowed to remain in the wound. The great relief felt by one who uses the rubber roll is a large factor in abdominal operations.

Tongue Signs of Typhus.—Some weeks ago THE JOURNAL mentioned the tongue sign of typhus to which P. Remlinger called attention. In his extensive experience with typhoid, paratyphoid and typhus in northern Africa, he noticed that when a patient with typhoid or paratyphoid was asked to put out his tongue he did so without effort. But when the patient had typhus, his tongue did not seem to be under his control. Try as he might, he was unable to get the tongue past the teeth, and sometimes the tongue seemed to be attracted back, toward the pharynx. There was occasionally at the same time a slight tendency to trismus, from contraction of the masseters. In three years' experience at points where typhus was far from infrequent, he never knew this tongue sign to fail in cases which proved to be typhus. In his communication on the subject in the *Paris médical*, 1916, vi, 42, he cites three articles on typhus by army surgeons who mention that the tongue "seems shorter than usual," or that "the patient is unable to show his tongue"; "it cleaves to the palate," or "the tongue trembles and cannot be extended beyond the teeth."

LOCALIZED OSTEOSPONDYLITIS *

WILLIS C. CAMPBELL, M.D.
MEMPHIS, TENN.

During the past three years I have seen four cases with varying symptoms, showing certain local changes in the vertebra, which appear to be analogous to monarticular osteoarthritis, for which reason I have used the term "osteospondylitis." The condition is probably known to others as a limited spondylitis deformans of the hypertrophic type, but I can find no accurate description in literature.

Fig. 1.—Spondylitis deformans, showing spurs and crescents about the intervertebral disks with marked flattening and atrophic changes in all parts of the spinal column.

The process is decidedly local and seems to be an affection of one intervertebral disk. The roentgenogram shows crescent shaped lamellae of bone, which are thrown from the body of one vertebra to its adjacent fellow, and may completely encapsulate the disk, producing solid external fixatiop of two vertebrae, or only a part of the circumference may be involved. In some the bony bridge may be incomplete and connected by only one extremity to the vertebral body, and at times there may be no apparent union of either extremity to the bodies, which is probably explained by assuming that the process was fibrous in the early stage with later ossification. The bony lamellae may connect the bodies at their margins, the so-called "lipping," or may extend from the center of the exterior surfaces. The bodies or other portions of the vertebra show no abnormalities in shape, size or structure. In one acute case there was atrophy of the disk with bony substitution.

Fig. 2.—Spondylitis deformans, side view.

I have repeatedly seen similar anomalies in other spinal affections, especially spondylitis deformans, but always multiple and often involving the entire spine, and associated with definite bony changes in other portions of the vertebra itself (bodies, articular processes, ligaments, etc.). Garrod reports spondylitis deformans in one articulation, but before the days of universal use of the Roentgen ray. Goldthwait states that only a small area may be affected, but more frequently one region and often the entire spine.

In all four of my cases the affection was in the lumbar region.

REPORT OF CASES

Case 1.—L., man, aged 40, was first seen at the Baptist Memorial Hospital, Feb. 22, 1913. In December, 1912, he had lobar pneumonia from which he recovered, to be followed in a few weeks with pain in both lower extremities and gradual flexion of hips until walking was impossible. On examination the spine was rigid from extreme muscular spasm, both hips flexed 90 degrees, evidently double psoas contraction. Diurnal temperature, 99 to 101. Blood and urine negative. Roentgenoscopy revealed bodies of fourth and fifth lumbar vertebrae united by bridge of bone extending from the center of the exterior surface of the body of the fourth to the same point on the fifth, surrounding the intervertebral disk, which was atrophic and partially ossified. Clinically this case was identical with tuberculosis of the lumbar region, the diagnosis of "local osteospondylitis" being made by the Roentgen ray. The causative agent we presume was probably pneumococci, and a sequela to lobar pneumonia. Bradford frame with extension and hyperextension followed by plaster jackets gave perfect relief with no recurrence to present time. Repeated roentgenograms show no extension of process.

Fig. 3 (Case 1)—Extension of superior border about intervertebral disks shows partial ossification, being surrounded by bone extending from the center of the exterior surface of adjacent vertebrae.

Case 2.—R. L., man, aged 22, had gonorrhea, December, 1910. In May, 1911, he had severe pain in right lower quadrant of abdomen, also pain in back which radiated down right thigh and knee. Does not know whether fever existed. The appendix was removed with slight if any relief, and after two years, May, 1913, was operated on for "adhesions" with recurrence of symptoms, when a kidney exploration was considered. Patient very nervous and at times hysterical. Examination revealed tender area in the region of appendix. The movements of the spine were limited in side bending to the left, free to the right and slightly limited in flexion. Temperature, blood and urine were normal. Roentgenoscopy revealed bridge of bone on the right lateral aspect of lumbar spine between third and fourth vertebrae. Diagnosis, localized osteospondylitis. Extension of head and both lower extremities on Bradford frame followed by fixation to spine gave decided relief with no recurrence to the present time.

Case 3.—A., man, aged 27, single, fell from horse at age of 12, and wrenched back at 22, but no serious inconvenience followed either injury. For past three years has suffered pain in lumbar spine and in both lower extremities. Examination, June 1, 1915, revealed very slight limitation of motion in all directions. Roentgenogram shows bony bridge between second and third lumbar vertebrae, right lateral aspect. Evidently "localized osteospondylitis." Extension, hyperextension with later fixation gave relief.

Case 4.—Mrs. D., aged 40, in July, 1914, had suffered for one year with very acute attacks of pain in kidney region with referred pain to vulva and thigh. No abnormality could be found in urine following attacks. Roentgenoscopy was advised

* Read before the Section on Orthopedic Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

by general surgeon, who suspected renal calculi, after which, patient was seen in consultation, July 11, 1914. The roentgenogram showed crescent of bone between second and third lumbar vertebrae surrounding disk. No other region of the spine was affected. Diagnosis, localized osteospondylitis. No treatment was instituted, and I have not heard from patient since.

COMMENT

Evidently Case 1 was an acute pneumococcic infection of the cartilaginous disk between the fourth and fifth lumbar vertebrae, and could not clinically be differentiated from tuberculosis of this region. Pneumococcic infection of large joints is a rather common sequela of pneumonia, but no mention could be found when the spine was affected. The other three were of insidious onset and do not show so complete an osseous bridge, and are probably analogous to monarticular osteartheritis occuring in other joints. In operating on the hip for this condition one will frequently find a complete bony hood extending from the margins of the acetabulum to the neck of the femur materially restricting motion, though the joint proper may remain intact.

Two useless major operations were done in Case 2 and a third proposed, on account of the referred pains.

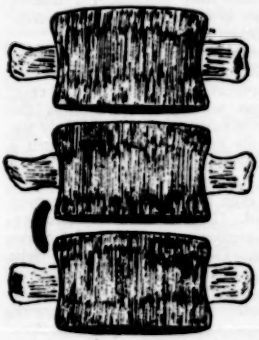

Fig. 4.—A crescent may be seen, as in Case 2, which indicates fibrous bands joining adjacent vertebrae with incomplete ossification.

After three years of definite symptoms, permanent and lasting relief was attained by simple and persistent orthopedic measures. In Case 4, kidney stone was suspected and operation seriously considered until adverse opinion was given after seeing the Roentgen-ray plate.

As spinal movements are not usually materially impaired (except in acute types), a diagnosis of abdominal lesions is frequently made from the referred pains, and the patient submitted to useless major operations; but this is also true in other spinal affections, especially tuberculosis of the vertebra with psoas abscess and contraction on the right side simulating appendicitis, which should give the spine more serious consideration in differential diagnosis of affections in the abdomen.

The etiology is probably the same as in monarticular osteartheritis. In no case was there a definite history of trauma in close relation to the affection; besides, I was unable to find similar changes in the roentgenograms of undoubted traumatic spines.

Three cases were relieved by simple orthopedic procedures, as no focal infections could be found.

Differential diagnosis of spinal lesions by the Roentgen ray is very meagerly considered in literature; in fact, few textbooks mention local manifestations except traumatic and tuberculous, for which reason the subject was considered worthy of presentation at this time.

Exchange Building.

ABSTRACT OF DISCUSSION

DR. F. J. GAENSLEN, Milwaukee: It is well for all of us to be reminded constantly of these referred pains. As was shown in one of the histories, the patient had been subjected to a number of operative procedures, and others were contemplated. In considering the cases cited the idea naturally suggests itself, as it did to the essayist, that the condition in question is an early localized lesion of the generalized process, which we recognize under the name of hypertrophic arthritis of the spine. It is perfectly conceivable that calcium deposits may occur much earlier in certain areas than in others, and in such instances the condition would appear to be a local one rather than generalized at least for the time being. Whether the new term osteospondylitis, or any new name, should be given to this condition, because it is merely a localized process, is a debatable point. Dr. Murray of Liverpool some years ago called my attention to the fact that these hypertrophic deposits of the spine are rarely found on the left side of the bodies of the vertebra, while they may be very prominent on the right. He suggested at that time, that the pulsating aorta probably prevented the deposit on the left. Since that time, I have always examined museum specimens with that point in view and have confirmed his observation. The diagnosis between a localized process of this kind and tuberculosis may be difficult at times. I recall one of my own cases, in which there was a very definite spike in one of the upper lumbar vertebrae with a loss of substance in the vertebra immediately below. Because of the unequal limitation of motion and the marked bony deposit early in the disease, I decided in favor of a local condition, such as that described. Future development proved the diagnosis to be correct.

Fig. 5.—Roentgenogram of Case 3 indicates bony lapping of adjacent borders about intervertebral disk; no change in disk or other portions of spine.

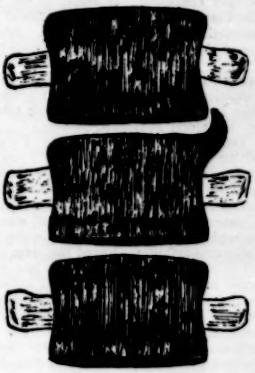

Fig 6. (Case 4)—Extension of superior border about intervertebral disk, the adjacent vertebra above showing no change.

DR. ALBERT H. FREIBERG, Cincinnati: The cases which have been shown by Dr. Campbell are very interesting, but I think that they are far from being rare. We see cases of that kind, every now and then; but Dr. Campbell, I think, has shown us cases of infectious osteo-arthritis of the spine. I object very seriously to a multiplication of names. "Localized osteospondylitis" is unscientific, as the disease is not always localized in these cases, and because such a term produces con-

fusion. We do not need a new term for this disease. I have seen this condition half a dozen times or more, and on both sides at once; and I think that it is a part of the condition which we call infectious osteoperiostitis or osteo-arthritis, as the case may be. In one of my cases, there was some difficulty in diagnosis; because, soon after the onset of the disease, abscess formation was apparent. I do not remember what the etiology of the case was, but we were fairly clear about it. Unless we are dealing with a mixed infection which is unusual in these conditions, they very soon clear up in the roentgenogram by the appearance of new bone, which we do not see as an early manifestation in tuberculosis. When we see new bone early in the course of disease, we should be cautious about making a diagnosis of tuberculosis; for it is not a part of the pathologic anatomy of that disease except late as a part of the process of repair.

DR. ROLAND MEISENBACH, Buffalo: In the main, I agree with Dr. Freiberg. I do not believe that Dr. Campbell wishes us to understand that the spurs which he has shown represent a local process, but rather a localized entity of a general metabolic diathesis. I believe that in some cases the osseous spurs are seen in a very early stage, even an earlier stage than Dr. Campbell has shown. I especially refer to patients complaining of backache, with only slight muscular spasms, or very slight restriction of spinal motions, due rather to muscular spasms than to the actual bony formation. I believe that these muscle spasms are produced by very small spicules such as Dr. Campbell has shown, but in an earlier stage. These I have seen in a number of cases to be embedded in the intervertebral disks, and later on they grow in size and also appear in other joints than the vertebrae. I think, however, that it is very important to make early diagnoses of these cases, if possible. I have followed some of these cases and have had an opportunity to make a careful study, including the metabolic study, by which it was possible to diet the patient according to the metabolic chart rather than at random. It is also interesting to note how these charts would change. One of the earliest objective symptoms which is noted is a slight rigidity in the spine. The early diagnosis can sometimes be made by noting clouded intervertebral disks on the roentgenogram and in rare instances, actual small spicules can be seen. These are often the patients who complain of vague rheumatic conditions. My plea is for early diagnosis.

DR. W. RUSSELL MACAUSLAND, Boston: This nomenclature is very confusing. It seems to me that the roentgenogram Dr. Campbell showed and the clinical picture correspond to a monarticular infectious process. We see these spicules or spurs thrown out in different stages in other monarticular infections—notably in the elbow joint, around the acetabulum, and on the bottom of the os calcis. It seems to me that this condition can be classified under a much simpler terminology; that is, infectious arthritis of the spine with spur formation in the lateral ligaments.

DR. J. T. RUGH, Philadelphia: I want to mention two cases of the older type with pain that I have treated. I anticipated Nature's efforts at ankylosis of the spine, and placed bone grafts after the method of Albee, with excellent results.

DR. W. C. CAMPBELL, Memphis: I had no idea of originating a new term. "Osteospondylitis" would be the natural term to apply to the same condition in the spine that in a joint we call osteo-arthritis. I used the term "local" as the process in all of my cases was confined to one intervertebral disk in the same manner that monarticular osteo-arthritis of a joint is confined to one joint. Such a process, of course, may originate at a distant focus. If "osteospondylitis" is confusing to anyone, I am perfectly willing to apply "osteo-arthritis" or any other term, for it was only my desire to call attention to certain local processes with referred pains which had been diagnosed as acute abdominal lesions. Two of the cases were observed over a long period of years, and show no extension to other portions of the spine. All responded to simple orthopedic measures. I do not believe that the aorta has any influence on the distribution of the process, as suggested by Dr. Gaenslen, for the condition is frequently bilateral or on either side. I stated that I did not regard the condition as uncommon, though one can find scant reference to such local changes in the spine; but there is ample discussion of analogous affections in joints—i. e., monarticular osteo-arthritis.

THE VALUE OF THE WASSERMANN TEST IN PREGNANCY *

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In consideration of this subject it was thought advisable to discuss it under three main headings: (1) its value from a sociologic point of view; (2) its value from a medical point of view; and (3) theoretical serologic considerations.

VALUE OF WASSERMANN TEST FROM A SOCIOLOGIC POINT OF VIEW

Under the first caption we primarily consider the case of the mother who may or may not have a dependent family. She may be, but usually is not, aware of the fact that she has the disease. This state of affairs is dependent on several causes. In the first place, many more women than men contract the disease innocently, and therefore are much more apt to ascribe its manifestations to other causes.

Second, the initial lesion is usually within the vagina and causes relatively little discomfort. Gaucher[1] has shown that in 33 per cent. of pregnant and 37 per cent. of nonpregnant women with primary syphilis the initial lesion cannot be demonstrated. Frequently the secondary manifestations are slight or are of such a character that they are ascribed to other causes. There are a certain number of patients who give no manifestations of the disease even though carefully observed and closely questioned. These patients, therefore, demand more than a casual examination to detect the presence of the disease. They have the inherent right of any patient to a careful, thorough examination, which is all the more important because they are the actual or potential mothers of families. Moreover, the danger to which these women are exposed because of the inherent tendency to miscarriage and premature labor in this disease is not to be thought of lightly. Because of the general debilitated condition consequent on the syphilitic infection, these patients are much more susceptible to puerperal sepsis and much less able to withstand its ravages. Even if puerperal sepsis does not occur, considerable harm may result from the psychic shock attendant on one or several miscarriages or the birth of diseased or marasmic children.

The rights of the fetus must next be considered. Proper treatment during gestation will usually permit the mother to carry the fetus to full term. Trinchese[2] has shown that pregnancy is rarely terminated before the fourth month by syphilis. Of the cases of miscarriage from the fourth to the seventh months with dead children, from 35 to 40 per cent. are from syphilitic women. Of the cases of premature birth at the eighth month, a large percentage are from syphilitic

* From the Departments of Experimental Medicine and of Obstetrics, University of Illinois, College of Medicine.
* Read before the Section on Obstetrics, Gynecology and Abdominal Surgery at the Sixty-Seventh Annual Session of the American Medical Association, Detroit, June, 1916.

1. Gaucher: Quoted by Carle, Ann. de dermat. et de syph., 1913, iv, 451.
2. Trinchese: Beitr. z. Geburtsh. u. Gynäk., Berlin, 1913, xviii, 149.

women, and this group comprises about two thirds of all the syphilitic children. He believes, therefore, that the infection usually occurs after the fourth month and more commonly in the latter months of pregnancy, and hence early and intensive treatment in a given case gives the baby a good chance. Repeated miscarriages, therefore, or the birth of undeveloped children from this cause are unnecessary and cast a decided reflection on the skill of the attendant physician.

According to reliable authorities there is a high percentage of cases in which mental deficiency varying from absolute idiocy to the moron state is attributable, at least in part, to the deleterious effects of congenital syphilis. Gordon[3] found 50 per cent. of this group reacting positively.

Also the prevention of various deformities, such as the saddle nose, saber shin, syphilitic keratitis, deafness and deformities of the teeth and bones, is coming to be regarded as necessary to the complete fulfilment of our obligations to the patients.

Again, there is the indirect loss of life seen in the cases of marasmic babies that do not develop normally and die of malnutrition or some mild infection which they would be able to withstand if they were not syphilitic. Engle and Reimer[4] in this connection have shown that of children who show syphilitic lesions within the first month nearly all die. If the lesions appear in the second month two thirds die. Of those who first show lesions in the third month one half die. Only 29 per cent. of syphilitic children survive one year.

The protection of society in general from these possible sources of infection is an important consideration, and under this heading must be considered the danger from promiscuous osculation, the infection of a second husband, the transmission to other children in various ways from a congenital syphilitic baby or child, or its potential danger to a wetnurse or to foster parents. Besides these considerations the less probable though undeniably possible transmission of the disease through the medium of clothing, towels, drinking cups, and other fomites must be taken into account.

When individuals suffer mental impairment due to acquired or congenital syphilis, they become, depending on the amount of impairment, complete or partial charges of the state. It requires but a glance through the great charitable institutions with their cases of general paresis, tabes dorsalis, cerebrospinal syphilis, syphilitic keratitis, congenitally syphilitic idiots, imbeciles and morons to convince one of the great practical importance to society of the early recognition and active treatment of the disease.

Another great class of state charges which is a constant source of expense and menace to society is the criminal class. The percentage of syphilis is very high among these people but it is very hard to estimate in which cases the degeneracy is due to the infection and in which the infection follows as a result of the degeneracy. In this connection the statistics of the New York Health department quoted by Pollitzer[5] are of interest. He states that 35 per cent. of 3,809 cases from the criminal, degenerate and derelict class have syphilis. These were divided as shown in Table 1.

Of late years much has been said of the overproduction of inferior material by the lower and mentally inferior strata of society, and many meetings are being held throughout the country to consider the question of birth control. By preventing the birth of feebleminded syphilitic children this movement would be aided in no inconsiderable degree. Again, every social unit has an actual value to the state if it is capable of self-support. Therefore, the prevention of the death of the fetus by abortion or from other causes predisposed to by syphilis and the protection of the mother from puerperal sepsis or the various manifestations of the disease is an economic measure of great importance.

Another group of individuals must come in for consideration as regards protection from infection by a syphilitic pregnant woman, namely, the obstetrician and nurses. It is a significant fact that the forefinger of physicians is the second most common site for extragenital chancre. Dr. Hyde has said that rarely a week went by that he did not have a case of this kind in his office. The use of rubber gloves has reduced the number of these infections, but certainly not eliminated the possible danger of contamination. A positive Wassermann in any given case would serve to protect the medical attendants completely by insuring proper prophylactic measures. The protection of physicians and hospitals from malpractice suits by proving that the cause of an abortion or syphilitic infection antedated the time of entrance into the hospital or the attendance of the physician is of considerable medicolegal importance.

TABLE 1.—SYPHILIS IN THE DERELICT CLASS

	Number of Tests	Positive	Per Cent. Positive
Tombs Prison (men awaiting trial)	391	45	11.5
Hart's Island Reformatory (boys)	544	37	6.8
Penitentiary, Blackwell's Island (both sexes)	253	62	24.5
Workhouse (both sexes)	2,621	1,209	45.7

VALUE OF WASSERMANN TEST FROM THE MEDICAL POINT OF VIEW

In order intelligently to consider the value of the Wassermann test in pregnant women let us briefly consider its value in the various forms of syphilis uncomplicated by pregnancy. The test is now of such great value in medicine that it has become a routine measure in many hospitals, dispensary clinics and asylums. The percentage of positive reactions in the different stages of syphilis varies somewhat in the hands of different investigators, but on the whole the results agree fairly well. In primary syphilis the test is positive in about 80 per cent. of the cases after the seventh week. Previous to that time a negative reaction does not exclude syphilis.

It is in secondary syphilis, especially in the untreated, that we obtain the largest number of positive results, averaging from 90 to 100 per cent. Treatment will considerably lower this percentage. In tertiary syphilis the Wassermann test is of greatest value in diagnosis. Patients that have not been treated react positively in about 95 per cent. of cases. In those having irregular treatment the reactions are positive in about 75 per cent. of cases. The so-called parasyphilitic diseases, which a decade ago were classed under various headings, have now been proved by the Wassermann test and tissue stains to be but a manifestation of syphilis of the nervous system. In

3. Gordon: Arch. Pediat., 1916, xxiii, 273.
4. Engle and Reimer, quoted by Kellner: Ztschr. f. d. Erforsch. u. behandl. d. jugend. Schwachsinns, iv, 1.
5. Pollitzer: Am. Jour. Obst., 1916, lxxiii, 857.

general paresis the reaction is positive in the blood in about 100 per cent. of cases, and in the spinal fluid in about 90 per cent. Patients who have been treated in cases of tabes dorsalis average from 40 to 50 per cent. positive in the blood test, while those who are untreated give positive results in from 96 to 100 per cent. The cerebrospinal fluid in tabes dorsalis averages 60 per cent. positive. In cerebrospinal syphilis the positive reactions are nearly as high as in paresis.

The difficulty of diagnosis of latent cases of syphilis is increased by the indefinite history, by lack of clinical evidence of disease or by the peculiar and obscure manifestations of the disease. It has been demonstrated by many that a history of the disease as given by the majority of those who may have been consciously or innocently exposed is of very little value. Again, the patient may have syphilis clouded by a second disease or the symptoms may be those of a clinical entity entirely different from syphilis, and unless a Wassermann test is performed the true condition is overlooked and proper therapy neglected. This difficulty of correct diagnosis is shown in a recent paper by one of us,[6] in which of fifty-six cases in the medical dispensary that reacted positively the tentative diagnosis of thirty-two was other than syphilis. Only 50 per cent. of those having positive reactions gave a history of having syphilis. In another series of dispensary patients examined by Krumbhaar and Montgomery,[7] nineteen of forty-eight cases that gave positive reactions were tentatively diagnosed under other headings at the first visit. Any physician who has had many Wassermann reactions performed on his patients knows how frequently a difficult and troublesome case is set right by the results of the test. In latent syphilis the positive Wassermann reaction may constitute the only evidence of the existence of the disease and prompt specific therapy may prevent the appearance of tertiary lesions.

TABLE 2.—SYPHILIS AMONG WOMEN OF ALL CLASSES

	Number	Per Cent. Positive
Married women	116	10.6
Single women	44	13.6
White women	146	9.5
Colored women	14	28.5

The Wassermann reaction is not only a valuable aid in diagnosis, but is equally important as a guide in the treatment of syphilis. It should be emphasized in every case that the earlier treatment is begun the greater the possibility for the production of a permanent cure. Moreover, treatment should be continued until the Wassermann becomes negative. Treatment will modify the Wassermann in practically all stages of syphilis and change it to a negative in about 80 per cent of cases. Since most investigators agree that a positive Wassermann means the presence of living spirochetes somewhere in the body, even though the lesion is not clinically manifest, it is necessary to persist in proper treatment until the Wassermann becomes negative and then to continue to keep it so.

Most of the series of Wassermann tests in pregnancy that we have found reported deal with cases of known or suspected syphilis. Thus E. Bunzel[8] reports 88.8 per cent. positive Wassermann tests in cases showing secondaries, 88.8 per cent. in latent cases and 61.5 per cent. in suspected cases. In mothers of syphilitic children Leroux and L'Abbé[9] found 71 per cent. in cases with no manifestations, 71.33 per cent. in cases with outspoken manifestations, and 71 per cent. in cases with doubtful manifestations. E. Adronesco and F. Saratzeano[10] found 92.3 per cent. in mothers with latent or developing syphilis. P. Mulzer and Michaelis[11] found 83 per cent. positive in these cases. In a series of 72 cases only twenty-one of which showed clinical manifestations, Baish[12] found 87.5 per cent. positive Wassermanns.

Some authors give lower figures. Thus, Bar and Dannay[13] in pregnant and puerperal women with outspoken lesions found 41.66 per cent. with total inhibition and 8.33 per cent. with partial inhibition, and positive in only 13.12 per cent. of cases with suspicious history, as repeated abortion and macerated fetuses. Dannay[14] reports 53.3 per cent. strong and 33.55 per cent. moderately strong reactions in cases with open syphilis and 30 per cent. in suspected cases. Commisky[15] in a series of 1,822 routine Wassermann tests on pregnant women found 8 per cent. positive. Of those positive, 82 per cent. gave no history or clinical evidence of the disease. He quotes Williams to the effect that 75 per cent. of his series give no history of the disease.

The Wassermann reaction is still a reaction of mystery. It is now recognized by most authorities that the test is not a true antibody-antigen reaction, but depends on certain lipotropic substances produced in the tissues of syphilitics during the progress of the disease. The results of Noguchi[16] with practically pure spirochete antigen confirm those who hold that the Wassermann test is not a true immunity reaction. He obtained a much smaller percentage of positive reactions with this antigen in known syphilitics than the Wassermann gave, and a larger percentage of positive reactions was obtained when the Wassermann had become negative. On the other hand, negative reactions were obtained in leprosy when the Wassermann was strongly positive. His results are very closely related to the immunity reactions as we understand them at this time. Recently Zinsser, Malcolm and

TABLE 3.—SYPHILIS AMONG DIFFERENT NATIONALITIES

Nationality	Number	Negative	Positive	Per Cent. Positive
Negro	14	10	4	28.5
U. S. A.	29	21	5	17.3
Polish	36	28	6	16.6
Irish	11	10	1	9
German	27	25	2	7.4
Bohemian	10	10		
Hungarian	6	6		
Lithuanian	5	5		
Swedish	4	4		
English	4	4		
Russian	4	4		
Jewish	3	3		
Slavish	2	2		
Roumanian	1	1		
Finnish	1	1		
French	1	1		
Danish	1	1		
Syrian	1	1		

6. Moore, J. J.: The Journal A. M. A., Dec. 4, 1915, p. 1980.
7. Krumbhaar and Montgomery: The Journal A. M. A., Jan. 24, 1914, p. 290.
8. Bunzel, E.: Wien. klin. Wchnschr., 1909, xxii, 1230.
9. Leroux and L'Abbé: Arch. de méd. d. enfants, 1911, xiv, 881.
10. Andronesco, E., and Saratzeano, F.: Presse méd., 1912, xx, 271.
11. Mulzer, P., and Michaelis: Berl. klin. Wchnschr., 1910, xlvii, 1402.
12. Baish: Quoted by Mulzer and Michaelis (Footnote 11).
13. Bar, P., and Dannay, R.: Obstétrique, 1909, i, 1.
14. Dannay: Nouv. arch. d'obst. et de gynéc., 1912, i, 320.
15. Commisky: Am. Jour. Obst., 1916, lxiii, 676.
16. Noguchi: The Journal A. M. A., April 20, 1912, p. 1163.

McBurney[17] have used a pure spirochete antigen as a control in 159 cases and found twenty-one discrepancies, in a considerable number of which the spirochete antigen fixation indicated syphilis, which the ordinary antigen had missed. They do not regard their reaction, however, as specific, because similar reactions could be obtained from cultures of typhoid and colon bacilli obtained in the same way. They believe, however, from the apparently greater delicacy of the reaction that there is a certain specific element superadded.

There are various theories in explanation of the test. One of them by Bergel[18] is worthy of consideration. The spirochetes contain lipoid substance which induces the formation of antibodies or ferments invested with the properties of dissociating fats. The lipoid is similar to lecithin. The ferment after it is formed causes a positive reaction by acting on the lipoid substances which are always employed as antigens and the splitting of these produces an absorption of complement. Whether the complement is used up in the splitting process or becomes absorbed by the split products he does not state. As long as the tissue fluids do not contain these fat-splitting ferments the reaction is negative. Later, as this lipase increases, the reaction becomes positive. It is well known that all ferments, but especially the proteolytic, are increased in syphilis.[19] Likewise we have a great concentration of ferments, especially the proteolytic, in pregnancy, pneumonia and various other conditions, as previously pointed out by one of us.[20]

In nonpregnant conditions and in various diseases which increase the proteolytic ferments the Wassermann when performed with the best controlled technic is specific. Whether such is the case in pregnancy, in which state the ferments of the blood are greatly increased, is one of the points for investigation in the present paper.

The later work on the Abderhalden reaction has shown that there is a rise in the antiferment titer of the blood in pregnancy coincident with the increase in ferments. The antiferments, at least for the proteolytic ferments, have been shown to be of lipoidal character.[21] Hence, it will be seen that any condition such as pregnancy in which the lipoidal content of the blood is increased, an interference might theoretically be expected in the reaction that depends for its specificity on the presence or schism of lipoidal bodies.

Abderhalden reactions performed in twenty-five cases of this series gave decided positive reactions, but no difference was noted in the cases giving a positive Wassermann. This is not surprising, as by the dialysis method of the Abderhalden test quantitative results are not to be expected except in serums of widely different ferment titer.

TECHNIC

In our series of tests we used the antichicken hemolytic system. Washed chicken corpuscles were made up in a 2 per cent. suspension and to this was added twice the titer of hemolysin. For complement we used fresh guinea-pig serum diluted to 8 per cent. This was titrated each day and twice the titer employed in the test. Two or more antigens were used in each test. These were acetone insoluble fractions of beef and human heart properly titrated so that 0.1 c.c. of a 1 to 10 dilution was the antigenic dose for each test.

All serums were heated to 56 C. (132.8 F.) for one-half hour and used in amounts of 0.1 c.c. After the patient's serum, the antigen and complement were added to the test tubes, the total volume was made up to 1 c.c. by the addition of normal salt solution and then incubated for one hour, after which 1 c.c. of sensitized chicken corpuscles were added and the whole again incubated for one hour, at which time the readings were made.

CLINICAL MATERIAL

The serums studied were obtained in a routine examination of the cases in the obstetric ward of Cook County Hospital, Chicago, and a few from private hospitals. Blood was drawn at various intervals from the fifth week of gestation to the thirty-second day of the puerperium. The majority were from the ninth month to term. In a few cases only the retroplacental blood was examined. In several cases fetal blood from the cord and mother's blood were examined simultaneously. In a few cases Wassermann tests

TABLE 4.—POSITIVE WASSERMANNS IN PREGNANCY

Number	Race	Age	Para	Length of Pregnancy	Abortions	Civil Status	Social State	History of Syphilis	Remarks
1	U. S. A.	28	3	8 mo.	...	M.	L.	0	Healthy
2	U. S. A.	..	6	6 wk. after birth	...	M.	L.	...	Eclampsia, blood drawn 6 hours after birth
3	German	..	4	7 days puerper.	...	M.	L.	...	Postpart. mania, 2 tests, 32 days apart
4	Polish	23	1	9.5 mo.	...	S.	L.	0	
5	Polish	28	1	9 mo.	...	M.	L.	0	
6	German	27	2	6 mo.	0	M.	L.	0	Threatened abortion
7	U. S. A.	21	2	9 mo.	0	M.	L.	0	
8	Polish	22	1	9.5 mo.	0	S.	L.	0	
9	Polish	19	1	8 hrs. p.p.	0	S.	L.	0	
10	Negress	22	2	8 mo.	1	M.	L.	0	
11	Irish	25	2	.....	0	S.	L.		
12	Negress	36	6	10 mo.	2	M.	L.	+	Two tests 1 month apart
13	Polish	24	2	9 mo.	0	M.	L.	0	
14	Polish	23	2	.....	1	S.	..	0	
15	U. S. A.	43	8	.....	3	M.	L.	0	
16	U. S. A.	20	1	.....	2	S.	L.	0	
17	Negress	27	2	10 mo.	0	M.	L.	0	Goiter
18	Negress	27	2	.....	2	M.	L.	0	
Weak Pos.									
19	U. S. A.	17	2	8.5 mo.	0	M.	L.	0	
20	Polish	27	2	8.5 mo.	0	M.	L.	0	
21	U. S. A.	21	2	10 mo.	0	M.	L.	0	
22	Bohemian	24	6	.....	1	M.	L.	0	
23	U. S. A.	17	1	10 mo.	0	S.	L.	0	
24	Polish	22	2	9.5	1	S.	L.	0	

17. Zinsser, Malcolm and McBurney: Jour. Immunology, 1916, i, 180.
18. Bergel: München. med. Wchnschr., 1912, lix, 1095.
19. Falls: THE JOURNAL A. M. A., Jan. 1, 1916, p. 22.
20. Falls: Jour. Infect. Dis., 1915, xvi, 466.
21. Jobling and Peterson: Jour. Exper. Med., 1914, xix, 459.

were repeated. The results were identical in all but one. This was a case of eclampsia with several postpartum convulsions. The serum for the first test was obtained six hours after the delivery and was strongly positive. A second one made eighteen days later proved negative. No explanation of this is offered at this time.

The ideal way would be to have a test made on the patient's entering the hospital, one at the time of delivery, and one a month later, but this was found to be impossible in the present series because of the nature of the material used.

In the history of each patient we recorded the age, nationality, the number of the present pregnancy, length of the present pregnancy, history of syphilis, number of abortions, the legal status as to whether married or single, complications, and any other points that might be of interest.

A total of 160 women were examined. They ranged in age from 15 to 43 years, over 90 per cent. being from 18 to 22 years of age. Eight nationalities are included in this group. The number of each with the percentage of positive reactions is shown in Table 1. Parity varied from 1 to 14, the majority being under 4. Only one gave a history of syphilis and five gave doubtful histories. Twenty-three had had previous abortions, varying from one to four. Forty-four women were unmarried.

Eighteen, or 11.3 per cent. of the women, gave strong positive reactions; six gave doubtful reactions, and not being repeated we could not justifiably classify these as being syphilitic. Of 116 married women, 10.3 per cent. were positive; of forty-four single women, the percentage positive was higher, being 13.6 per cent. Among twenty-three giving a history of previous abortions, six, or 26 per cent., had positive tests. All the positive results were on patients in the Cook County Hospital, as none of the patients from other hospitals who come into this series had syphilis. These results are very close to those obtained by one of us[6] in a series of Wassermann reactions on medical dispensary patients, a class of individuals of the same social status as those under discussion. In the dispensary series 13.6 per cent. had positive reactions.

Whitney[22] in the medical division of the outpatient department of the University of California Hospital found 21.8 per cent. positive, and of the entire outpatient department, a series of 7,885 cases, found 6.9 per cent. It might be objected that these series deal with patients of the lower grade of society in whom a prevalence of syphilis is more to be expected. However, Kolmer[23] states that the disease is from three to eight times more prevalent among the better than among the lower classes. Considering the eighteen giving a positive reaction, we find one had eclampsia, one postpartum mania, one threatened abortion, and one goiter. None of the others had any complications. The parity ranged from 1 to 8, the age from 18 to 43. One gave a history of syphilis and six, as stated previously, had previous abortions. Six were unmarried. Four were negresses.

It is well known that syphilis is more prevalent among negroes than in the white race. Our findings agree with this. Among 146 white women examined 9.5 per cent. were positive; among fourteen colored women 28.5 per cent., practically three times as many, were positive.

From the results of this series it would seem that the cases complicated by toxemias and mental disturbances give a higher percentage of positive reactions. From the small number of cases we do not feel justified in drawing definite conclusions.

When we consider this fairly large percentage of pregnant women who have positive Wassermann reactions, who have improper treatment or none at all, and who are continuously bearing syphilitic offspring, it is open to serious question if we as a profession are doing our duty by those patients. Moreover, it must be remembered that all mothers who have latent syphilis do not react positively to the Wassermann test. Boas[24] found that in eighty-one mothers giving birth to syphilitic children, only sixty-one, or 75 per cent., had a positive reaction. Leroux and L'Abbé,[9] in another series of mothers who had given birth to syphilitic children, had a percentage of 71 reacting positively, whether they had symptoms of syphilis or not. The fathers of these same children reacted positively in 42 per cent. of cases. This is easily explainable, as the fathers know the disease they have contracted, and are treated, while the mothers are in entire ignorance of their condition. Leroux and L'Abbé[9] conclude that maternal syphilis is often latent without any manifestations, and therefore more often virulent because unrecognized and untreated. Maternal syphilis, with a positive reaction, generally gives rise to outspoken symptoms in the child, sometimes to a latent syphilis with a positive reaction, and occasionally to healthy children. A large majority of children reacting positively have symptoms of syphilis, while with those persistently negative the child usually remains healthy. A positive reaction in a young child is an unfavorable prognostic sign.

SUMMARY

The Wassermann reaction is of great value in diagnosing syphilis in pregnant women in whom the condition is usually latent.

The diagnosis of this condition in mothers with the institution of proper treatment will prevent the increase of syphilitic children and those born can be properly treated as early as possible.

The majority of mothers having syphilis are ignorant of their condition and therefore improperly treated.

In a series of 160 pregnant women we found 11.3 per cent. positive Wassermanns.

In 116 married women 10.6 per cent. gave a positive reaction.

In forty-four single women 13.5 per cent. gave a positive reaction. White women were positive in 9.5 per cent. of cases; colored women in 28.5 per cent.

Only one of eighteen giving a positive reaction had a history of syphilis, six gave histories of previous abortions, three had severe complications of pregnancy, as eclampsia and mental psychoses.

ABSTRACT OF DISCUSSION

Dr. Edward P. Davis, Philadelphia: This paper carries with it a warning and a most important suggestion: that the Abderhalden and the Wassermann tests are never entirely conclusive under all conditions of pregnancy; hence we must not rely exclusively on them. The Abderhalden test has failed in a very considerable number of cases; the Wasser-

22. Whitney: The Journal A. M. A., Dec. 4, 1915, p. 1986.
23. Kolmer: The Journal A. M. A., May 6, 1916, p. 1435.
24. Boas: Quoted by Kolmer, Infection, Immunity and Specific Therapy, p. 463.

mann test does not always detect latent syphilis. Both tests should be employed with great caution and we come back to the old principle that study of the individual patient and clinical observation should never be neglected for laboratory findings.

DR. J. R. LOSEE, New York: During the past two years at the New York Lying-in Hospital we have made routine Wassermann tests on 2,000 antepartum women; 3.05 per cent. were positive. Fildes, in the East End of London, observed 3.9 per cent. in 677 women. This work was undertaken with the intention of treating these syphilitic pregnant women, but it was found that without a proper sociologic organization it was impossible to carry it on, for these patients often failed to return for treatment. Observers have shown that from 40 to 50 per cent. of women who have given birth to repeated macerated fetuses are syphilitic, and in many other cases the history is doubtful. Of twenty-seven women who were delivered of macerated fetuses at the hospital, nine, or 37 per cent., gave a positive reaction. Syphilis has also been credited for the intrapartum death of the infant but at this stage the many other mechanical conditions which arise and cause the death must be considered. However, before we can obtain any degree of success in the care of these unfortunate women, antenatal clinics will have to be established and supplied with sufficient nurses who will follow up these women in their homes.

DR. FREDERICK H. FALLS, Chicago: I agree with what Dr. Davis said about the results of the Abderhalden and Wassermann tests. We must be careful about interpreting any biologic test as being absolute evidence and negating all clinical evidence. However, in the hands of the best men, we find that the Wassermann reaction is to be relied on in a large percentage of cases, and my plea is that we use this valuable aid in these pregnant women in order to give them a better chance to combat the disease during and after pregnancy and the offspring a better chance of starting life without the handicap of syphilis in an outspoken degree. The value of the Abderhalden test is very questionable. Two years ago, at Atlantic City, I pointed out the number of cases in which fallacies arose when the Abderhalden test was performed on nonpregnant individuals. Many of these gave positive results. Its greatest value was shown to be in a negative reaction. When negative it ruled out the possibility of pregnancy; when positive, the woman might or might not be pregnant. The reason for bringing the Abderhalden test into this discussion is that according to the latest work, particularly that of Jobling and Petersen, the Abderhalden reaction is dependent largely on the production of antiferments in the blood which are lipoidal in character. The Wassermann test probably is dependent on the production of lipolytic ferments in the blood of syphilitics. If the blood serum in these two conditions contains these constituents you can see that it would be theoretically possible that pregnancy might throw off the Wassermann test. Apparently, from our study it does not. Dr. Losee with a large number of cases, larger than ours, found 3 per cent. positive. I think the average returns on Wassermann test as performed throughout the country will give a higher percentage. There may be some explanation for the apparent discrepancy in his series. The one thing I should mention also in regard to his statement about the death of the fetus being ascribed to syphilis and not due to it, is that in any given case not only should a Wassermann be done, but the cord and placenta should also be examined for spirochetes. Dr. Slemmens of Yale occasionally gets positive demonstrations of spirochetes in the placenta or cord in the presence of a negative Wassermann in a known syphilitic mother. One cannot be too careful in making a search for the evidence of syphilis. The subject is one of great importance, for the mother, the baby, and for us as physicians.

Cleanliness.—Long experience has taught the lesson that cleanliness offers a protection against disease; that clean surroundings are apt to be free of infection and that clean food is apt to be safe food.—Rosenau, Preventive Medicine.

A STUDY OF AN EPIDEMIC OF FOURTEEN CASES OF TRICHINOSIS WITH CURES BY SERUM THERAPY

PRELIMINARY COMMUNICATION *

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The following observations were made in the course of a study of an epidemic of fourteen cases of trichinosis in which the patients were admitted to the wards of the St. Joseph's Hospital at Far Rockaway, N. Y. The laboratory studies were made partly in the laboratory of the hospital and partly in my home. Observations 1 to 6 inclusive represent confirmation or amplification of findings already made by other authors. All the other findings are new.

1. The Kernig reaction was present in all the cases.
2. Edema of the face occurred in all the cases.
3. Edema of the lower extremities occurred in six cases.
4. The reflexes in the lower extremities were abolished in all the cases and are still absent now (six months having elapsed since the cases first came under observation).
5. Trichinae were found in the blood in nine cases of the fourteen.
6. Trichinae were readily found in the cerebrospinal fluid in eight of the fourteen cases.
7. The diazo reaction was in direct proportion to the degree of eosinophilia.
8. Gangrene of one lower extremity was observed once.
9. The leukocytosis diminished as the eosinophilia increased. The blood coagulation time is markedly prolonged in trichinosis.
10. In one case trichinae were still found in the cerebrospinal fluid of a child 3 years of age three months after clinical recovery.
11. Trichinae were found in a pleural exudation once.
12. Trichinae were not found in the urine in any case.
13. Trichinae were not found in the uterus but were abundantly present in the placenta.
14. Trichinae were present in large numbers in the milk of a nursing woman and were found in the piece of excised mammary gland.
15. In one case complicated by furunculosis, trichinae were found in the pus of a furuncle of the external auditory canal. On inoculation into a rabbit, trichinosis was produced.
16. In two cases the duodenal tube was passed under control of the fluoroscope. In one of the two cases trichinae were abundantly found. This patient is now suffering from cholecystitis.
17. The feces were clay colored throughout the disease in every case, and have the same appearance in the five cases that have remained under observation. From experimental studies it appears probable that the color is due to the reduction of bilirubin by living trichinae.
18. In a cat which accidentally developed trichinosis after eating a rabbit in which trichinosis had

* Read by invitation at a meeting of the staff of the Pathological Laboratory, Mount Sinai Hospital, New York, July 12, 1916.

been experimentally produced, the stools were also found to be clay colored.

19. Trichinae were present in the stools of all the cases throughout the disease and in three cases in which studies in this direction were carried on after recovery. They are easily proved to be present by making the stools alkaline and allowing them to stand from twelve to twenty-four hours.

20. Trichinosis was produced by the injection of pleural fluid from a case of trichinosis.

21. Trichinosis was produced by feeding feces from cases of trichinosis to two dogs.

22. On feeding infected meat to animals the eosinophils appear usually within the first five days. In one case 10 per cent. of eosinophils were found after thirty-six hours. There was no leukocytosis when the eosinophilia first appeared.

23. The blood of a series of infected animals was examined for trichinae. After five days' examination it was negative in all. The first trichinae were found on the seventh day, two or three then being seen in each field. The temperature during the first five days remained from 100 to 101 F.

24. Trichinae were absent in the heart muscle, as was also the eosinophilia. Feeding of heart muscle to animals gave negative results.

25. Intraperitoneal injection of urine from cases of trichinosis caused no infection.

26. Trichinae occurred abundantly in the brain, and on injection of such tissue into animals the disease can be produced, the eosinophilia being more marked than any other form of production of the disease.

27. Trichinae were found abundantly in the pancreas.

28. As many as four coiled trichinae were found in muscle fibers.

29. Ascites occurred in the experimental disease in animals.

30. The use of serum from human patients who recovered removed the eosinophilia persisting after recovery in man or animals within forty-eight hours.

31. The injection of normal serum had no therapeutic value in trichinosis in man or animals. The same is true of salvarsanized serum and salt solution.

32. In animals the injection of convalescent serum gives an almost complete prophylactic result. Animals fed with infected meat within twenty-four hours after the administration of the serum may develop a mild form of trichinosis. Animals fed at a period later than that prove to be immune. All these experiments were controlled.

33. If immune serum is mixed with infected meat and then fed, the animals do not develop trichinosis, although the ingestion of the same meat without the serum is invariably followed by the appearance of the disease.

34. In two cases of trichinosis in the very active stage of the disease the use of immune serum proved to be of remarkable curative value. There was a decided drop in the temperature within six hours and the abnormal temperature was entirely gone within forty-eight hours. The eosinophilia showed a considerable drop within six hours; there was then a secondary rise and then a return to the figures found in normal blood within forty-eight hours.

35. In twenty-four rabbits suffering from the disease experimentally produced, the immune serum had a curative effect within twenty-four hours.

CARBON MONOXID POISONING

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In the course of investigations carried out for the United States Bureau of Mines on the efficiency of artificial respiration or "resuscitation" apparatus,[1] and on the mine rescue, or oxygen breathing, apparatus worn as a protection against asphyxiating gases,[2] my attention was called to the fact that there is a widespread misapprehension of some of the fundamental elements concerned in carbon monoxid poisoning. A brief statement of these facts, of the results obtained by investigators in the Bureau of Mines,[3] and of some of my own experience may therefore be of use both to clinicians and to experimenters.

Carbon monoxid is the principal product of incomplete combustion of carbonaceous matter. It is responsible for more deaths than the total of all other gases. To carbon monoxid are chiefly due the poisonous effect of smoke in burning buildings, of fumes around furnaces and from explosives, of the "after-damp" of explosions of methane and coal dust in mines, and from mine fires of timber or coal. To it also are due the unfortunately large number of fatalities in American cities from the character of the illuminating gas supplied.[4]

Carbon monoxid is almost odorless, and has no irritating effect on the lungs. It appears, indeed, to be physically and in relation to the tissues of the body, even including the nervous tissues, an entirely inert and harmless gas except in a single respect — its avidity for hemoglobin, the red coloring matter of the blood. With this substance it forms exactly the same kind of combination as does oxygen, but with an attraction approximately 250 times as strong. Its poisonous effects appear to be wholly due to the resulting decrease in the oxygen carrying power of the blood.

The character of the combination of carbon monoxid with hemoglobin may be seen from the following simple experiment:

A drop of blood drawn from the finger is diluted with water, a drop of very dilute ammonia is added, and the reddish yellow solution is shaken with air. One third of this solution is poured off in a test tube, while the remaining two thirds are shaken with illuminating gas in another test tube. In the course of a few minutes this portion assumes the cherry red tint characteristic of carbon monoxid hemoglobin. It is now

1. For a statement of the results of these investigations see Henderson, Yandell: Resuscitation Apparatus, THE JOURNAL A. M. A., July 1, 1916, p. 1.

2. See a forthcoming Bulletin of the Bureau of Mines, by Yandell Henderson and J. W. Paul.

3. Burrell, G. A., and others: Technical Papers 11, 62, and 122, U. S. Bureau of Mines.

4. Illuminating gas is composed in varying amounts (depending chiefly on the price of petroleum) of "water gas," "coal gas," and the vapor from superheated or "cracked" petroleum. So-called "water gas" contains about 30 per cent. of carbon monoxid. It is comparatively cheap to manufacture, and is produced by blowing live steam over hot coal with the general reaction $C + H_2O = CO + H_2$. The gas formed by the destructive dry distillation of coal, technically called "coal gas," contains only about 6 or 8 per cent. of carbon monoxid. It is therefore far less poisonous than "water gas." The hydrocarbons which it contains, which give the gas flame its luminosity, and which have to be supplied to "water gas" from petroleum vapor, are toxicologically practically negligible. "Coal gas" is chiefly used in European cities, while "water gas" is the chief ingredient in America. Yet in many European cities, particularly in England, the price of gas to the consumer is only 50 or 60 per cent. of that usual in American cities. Owing to the greater proportion of "coal gas" and less "water gas," the leakage of the same amount into a bedroom in England will cause the occupant merely a bad headache, while in America death or serious injury results. There is an intimate causal connection between inflated capitalization, a large proportion of water gas, and the high death rate from carbon monoxid poisoning in American cities. Few facts are more significant than this in indicating how deeply we must cut into social problems in order to apply preventive medicine.

divided into two parts, one of which is set aside in a third test tube, while the other is vigorously shaken with air. In a few minutes this sample has lost its cherry tint and has returned to the appearance of the normal blood set aside in the first test tube mentioned above. The mass action of the oxygen of the air has displaced the carbon monoxid from its combination with the hemoglobin. To all intents and purposes the condition of this blood is the same as if it had never been combined with carbon monoxid.

It is a complete misapprehension, therefore, to suppose that carbon monoxid forms a permanent compound with hemoglobin, or induces any lasting deterioration in its oxygen carrying power. When a man has been overcome by carbon monoxid, and is thereafter brought out of the bad atmosphere into fresh air, the combination of carbon monoxid with the hemoglobin of his blood immediately begins to break up. The higher the percentage of oxygen in the air inhaled, the sooner the carbon monoxid is displaced and the oxygen carrying capacity of the hemoglobin restored. For fifteen or twenty minutes after removal from the poisonous atmosphere (but not for more than half an hour), it is beneficial to administer pure oxygen or air considerably enriched with oxygen by means of a tank, bag, and mask with valves which do not allow rebreathing. Even when only pure air is breathed, the mass action of its oxygen is usually sufficient to displace the greater part of the carbon monoxid in an hour or even less time, so that the oxygen carrying power of the hemoglobin is restored sufficiently to meet the patient's needs. Practically all of the carbon monoxid is thus eliminated, and the hemoglobin fully restored in three or four hours. This result is facilitated by the rapid breathing, usually from thirty-five to forty times a minute, which such patients, if not too profoundly asphyxiated, usually develop within half an hour after being removed to fresh air.

Very often the victim never recovers consciousness, and dies a day or two later. Many physicians still hold to the belief, now completely disproved, that the prolonged coma is due to retention of the carbon monoxid, and advocate bleeding and infusion of oxygenated saline solution, the transfusion of blood from some healthy person, and other active efforts at restoration. The minimum time within which it is possible to apply such measures is seldom less than two hours after the patient is brought into fresh air. None of them, nor any known procedure, aside from careful nursing and symptomatic treatment, has been conclusively demonstrated in practice to be of benefit, or has any distinct experimental support. Recovery, when it occurs, is not due to such procedures but occurs more or less in spite of them. There is no reason to expect them to be beneficial, since it is not retention of carbon monoxid, nor any direct action of the gas, but the results of the injury to the brain and other organs due to insufficient oxygen supplied by the blood while the patient was breathing the gas, which is responsible for the prolonged coma and subsequent death or incomplete recovery. There is no known method of restoring tissues to normality after parenchymatous degenerations have once been initiated. Left to itself, nature does all, so far as present knowledge goes, that can be done to stop the abnormal processes. The man recovers completely if the asphyxia has not been too intense and prolonged, although in many cases men who have once been "gassed" exhibit a muscular weakness of the heart permanently thereafter. In more severe cases, the patients recover only with the loss, partial or complete, of vision, power of speech, or with some other nervous defect.

To a great extent the severity of the immediate and after-effects of inhaling carbon monoxid depends on the following conditions: In a normal man at rest the tissues consume only a little over one third of the oxygen which the blood brings to them, while during muscular exertion nearly two thirds are utilized. Accordingly the blood of a man at rest may become nearly one third saturated with carbon monoxid without his realizing that anything is wrong. His judgment, temper and behavior, however, are often affected in ways similar to alcoholic intoxication. Such behavior is often seen in city firemen and in the men of a mine rescue crew after breathing smoke. Similar behavior occurs frequently among transient visitors to the summit of Pike's Peak, and is clearly due to deficiency of oxygen.

If a man in this condition tries to make any considerable exertion, the fraction of his hemoglobin uncombined with carbon monoxid may be insufficient to transport the oxygen needed, and he is liable to collapse. When more than half saturated, he is liable to collapse even at rest. If he remains for a considerable time in this condition, the delicate nerve cells of the brain, and less often also other organs, are injured by the insufficient supply of the oxygen which the blood is able to transport to them, and unconsciousness (coma) results. As a rough estimate, it may be stated that usually a man will die who has breathed 0.2 per cent. of carbon monoxid mixed with air which is in other respects normal, for four or five hours, or 0.4 per cent. for one hour. With from 2 to 5 per cent. of carbon monoxid, as after an explosion of coal dust, nearly all of the hemoglobin is combined by the first few breaths drawn, and death follows almost as quickly as in drowning. This is the case also when illuminating gas only slightly diluted with air is inhaled.

The percentage saturation finally reached in breathing any mixture of air and carbon monoxid depends on the relative amounts of the two gases present in the inspired air, multiplied by their relative affinities for hemoglobin. The rate at which the partitioning of the hemoglobin between the two gases proceeds toward the equilibrium point depends largely on the volume of the subject's breathing. A child having a relatively greater respiratory exchange for its size is overcome more quickly than an adult.

On this account small animals, as mice and birds, are overcome much more quickly than are men. Canaries are always carried by the rescue crews of the Bureau of Mines into mines in which there is reason to suspect the presence of carbon monoxid. After the bird has fallen from its perch the portable cage can be closed and oxygen run in from a small tank attached to it. Experience demonstrates that birds may be thus temporarily asphyxiated and revived repeatedly in the course of a few hours, or on many successive days, and be none the worse thereafter. This could scarcely be the case if carbon monoxid had any general poisonous action apart from its temporary combination with hemoglobin. Furthermore, the evidence available indicates that the mere breathing of inert gases deficient in oxygen but containing no poisonous element produces symptoms, degenerations and subsequent death in all respects like those resulting from carbon monoxid poisoning.

The foregoing statements regarding the effects of carbon monoxid are based principally on the classic work of Haldane,[5] which the experience of the Bureau of Mines has confirmed in all principal features.

As further evidence that carbon monoxid is not in even the smallest degree a protoplasmic poison, the experience of the Pike's Peak expedition, of which I was a member, is of value. Both at ordinary altitudes and at the summit of the peak, the carbon monoxid method of determining the blood volume was repeatedly employed on every member of the party. This method involved the subject's inhaling a measured volume of the gas sufficient to combine with approximately 20 per cent. of his hemoglobin. No vigorous exertion was made for an hour or two after the inhalation, and no considerable ill effects were experienced. Within two or three hours practically all of the carbon monoxid had been eliminated, and the subject was usually as fit for vigorous exertion as before. In fact, he usually went for a hard tramp or climb in the afternoon of the same day. This, of course, would not have been possible, especially in the thin air of a great altitude, if any lasting deterioration in the hemoglobin of the blood or combination of carbon monoxid in the nervous system had been produced.

In contrast with this experience may be placed the fact that in cases of illuminating gas poisoning, the patients are usually completely comatose long after the carbon monoxid in the blood has fallen much below 20 per cent. I have repeatedly examined such cases in New Haven, Conn., both suicides and innocent victims of the deadly "quarter meter." In six successive cases in which a sample of blood was taken for examination in from one to two hours after the patient had been removed to fresh air from the room in which the "gassing" had occurred, the elimination of carbon monoxid was found to have been so rapid that in only two cases was the presence in the blood of from 15 to 20 per cent. demonstrable. All of these cases had probably been saturated up nearly to or beyond the danger point of 60 per cent. Yet from one to two hours in fresh air had served to eliminate the carbon monoxid in every case down to less than 20 per cent., the amount which the small pocket spectroscope employed was easily capable of distinguishing. From three to four hours after removal to fresh air, the blood contained only undetectable traces. Four of these patients died within from twenty-four to sixty hours after the asphyxiation; one recovered completely; another still exhibited a month later a profound nervous impairment.

These observations are sufficient to demonstrate the unwisdom of bleeding patients who have been poisoned with carbon monoxid, as is sometimes done in order to stimulate the formation of new red blood cells. Such a formation requires many days to become fully effective. In the majority of cases the patient's blood is practically free from carbon monoxid before the bleeding is performed. Carbon monoxid poisoning occurs with such variations of circumstance, as size of room, flow of gas, duration of exposure, etc., and the cases exhibit such wide variations in the severeness of the initial symptoms, in the length of time required for recovery, and the completeness of restoration, that it is difficult to establish conclusions regarding them from merely clinical or even statistical evidence. From the experimental side, however, there is nothing which would seem more likely to diminish a patient's chance of recovery than treatment by bleeding.

The most exacting requirements for experimental evidence are met by the following cases:

Three men, all members of a Filipino band of approximately the same age, weight and physique, were overcome by illuminating gas while sleeping in a room together. One was treated during the following day by withdrawing blood and injecting saline solution saturated with oxygen. For a second a transfusion of blood from another and unpoisoned member of the Filipino band was performed. It was done late in the day and probably after all of the carbon monoxid had been eliminated. For the third nothing was done beyond the ordinary procedures of good nursing. The first two died in the course of the two or three days following the asphyxiation. The third survived, but when seen three weeks later, had recovered only sufficiently to answer the simplest questions as to his name and where he came from.

Thus it appears that about all that can be done in cases of carbon monoxid poisoning is to administer artificial respiration when the patients' own breathing has failed or is feeble, to administer oxygen for half an hour (longer is useless), to keep them warm if their temperature has fallen, to supply water to the system preferably by a Murphy drip, and otherwise to give them good nursing and such symptomatic treatment as may be called for.

To these rather negative suggestions there is, however, one of an experimental character which may be added. It arises from the fact that the coma following asphyxiation has many points of resemblance to diabetic coma. The symptoms of asphyxial coma, especially the character of the breathing and the reaction and contents of the urine, indicate an intense acidosis. Accordingly in two cases I have administered a 3 per cent. solution of sodium bicarbonate intravenously. In one case a total of 2 quarts was given at intervals in two hours, and in the other a total of 4 quarts in six hours. The rate of inflow was regulated to avoid overloading the heart by noting the extent of distention of the veins of the neck and of the back of the hand. It was found that in spite of the very considerable supply of alkali to the system, the urine continued to show a strongly acid reaction, and no appreciable amelioration of symptoms resulted.

As my opportunities in such matters are of quite irregular occurrence, I would suggest that others with more frequent cases try out the possibilities of this line of treatment. In view, however, of the fact that in diabetes the administration of alkalies after the development of coma is of only temporary benefit, the probabilities are rather against permanent relief by this treatment of cases of asphyxia. As with all treatments of gas poisoning, there may be brilliant recoveries in apparently desperate cases — I have one such in my own experience — in which, when all the evidence is taken into account, it becomes apparent that nature alone deserves the credit.

CONCLUSIONS

1. Carbon monoxid is a physiologically harmless gas, except in its affinity for hemoglobin. Its toxic effects are wholly due to the inability of the blood combined with carbon monoxid to transport oxygen to the tissues.

2. Carbon monoxid does not form a permanent compound with hemoglobin. In the presence of excess

5. Haldane, J. S.: Jour. Physiol., 1895, xviii, 200, 430 and 463. For a summary of Dr. Haldane's observations, both on the scientific side and in the laboratory and in practical work after mine explosions in England, see Report to the Secretary of State for the Home Department on the Causes of Death in Colliery Explosions and Underground Fires, London, 1896.

oxygen, or even of pure air, carbon monoxid is rapidly given off and the oxygen carrying power of the hemoglobin is restored.

3. The continuance of coma, the subsequent tissue degenerations, and death after several days, resulting from carbon monoxid poisoning, are not due to retention of the gas, but are the results of injury to the brain and other organs by the insufficiency of oxygen supplied to them by the blood while the patient was breathing the gas.

4. There is no reason to believe that either bleeding or transfusion of blood is beneficial. They are more likely to be harmful.

5. Fresh air — with oxygen inhalation for a short time as early as possible — symptomatic treatment, and good nursing are the only measures to be recommended. Practically the die is already cast for death, permanent defects, or complete recovery at the moment when the patient is brought out of the asphyxial atmosphere.

6. It is just possible theoretically that alkali therapy may be beneficial in combating the acidosis induced by asphyxia.

A NOTE ON THE SERUM TREATMENT OF POLIOMYELITIS (INFANTILE PARALYSIS) *

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The epidemic of poliomyelitis that is prevailing at the present time so extensively in New York and in some degree widely throughout the United States has led to many inquiries being made regarding the serum treatment of the disease, and particularly of the stage to which the treatment has advanced. This brief paper is intended not only to answer such inquiries, but also to provide a basis for the wider employment of the treatment where the difficult conditions surrounding the obtaining of immune human serum can be surmounted.

It was demonstrated by Flexner and Lewis,[1] and afterward confirmed by several investigators, that monkeys which had recovered from an attack of poliomyelitis induced experimentally were not subject to successful reinoculation with the virus of the disease. This was followed by the detection by Römer and Joseph[2] and later by others in the blood of such resistant or protected monkeys, and then by Levaditi and Netter,[3] and by Flexner and Lewis in the blood of human beings who had recovered from acute poliomyelitis, of immunity substances which possessed the power of neutralizing the virus of poliomyelitis when the serum and the virus were brought together in the test tube. Flexner and Lewis ascertained also that the serum of monkeys actively immunized[4] with the virus, under conditions in which all symptoms of the disease were avoided, contained similar immunity bodies.

EXPERIMENTAL SERUM THERAPY

The next step taken was the determination by Flexner and Lewis that both the immune monkey[5] and the immune human serum[4] which exhibited the neutralizing power for the virus possessed also therapeutic properties for monkeys inoculated with the potent virus of poliomyelitis in contradistinction to the normal serum from the same animal sources which was devoid of those properties.

The experimental demonstration of the therapeutic activity of the immune serums was made in the following manner: Rhesus monkeys were inoculated (*a*) intracerebrally and (*b*) intranasally with a virus which had become adapted to the monkey and was highly potent. The effective intracerebral dose of a Berkefeld filtrate of a 5 per cent. emulsion of the spinal cord of an infected monkey was less than 0.01 c.c. Hence the quantity of the filtrate injected into the brain of the etherized monkeys varied from 0.01 to 0.1 c.c. The inoculations were made in the afternoon, and the therapeutic treatment was begun the next day or from eighteen to twenty-four hours later. When the virus was introduced by the nasal route the filtrate was not employed, but an emulsion of the spinal cord was rubbed on the upper nasal mucosa.

The immune serums were applied by intraspinal or subdural injection. The usual method was to inject from 2 to 3 c.c. of the immune serums through the lumbar puncture needle daily for several days or daily for three injections, followed by an interval of three days, when the three injections were repeated. The conclusions reached from these experiments were in substance that if the quantity of virus is not in excess of a given dose, the infection can be either wholly prevented or the onset of the paralysis much delayed. In other words, when dealing with the virus adapted to the monkey which induces poliomyelitis almost without exception and in which the symptoms are far more severe and the mortality far greater than occur in the disease in human beings, the immune monkey and human serums are capable of preventing in all but a few instances the development of the virus even when inoculated intracerebrally, and in the exceptional instances in which the development is not wholly prevented, the onset of the disease is much delayed. The power, therefore, to neutralize the virus possessed by the immune serums is exercised in vivo under severe experimental conditions almost as constantly as in vitro under relatively favorable ones.

In order that maximal effect of the immune serums may be secured, it is necessary that the injections be made into the subdural space, which can be readily and safely accomplished by means of lumbar puncture. The reason for this mode of application of the serum depends on the facts that it is the most direct route to the central nervous tissues, and however the virus is introduced into the body, it establishes itself in the cerebrospinal meninges.[6] It is logical, therefore, to endeavor to bring the immune serum, in as high a concentration as possible, into immediate relation with the seat of disease.

The power of immune serum, when injected subdurally, to prevent the development of experimentally

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* From the Rockefeller Institute for Medical Research.

1. Flexner, Simon, and Lewis, P. A.: Epidemic Poliomyelitis in Monkeys (Fourth Note), THE JOURNAL A. M. A., Jan. 1, 1910, p. 45.
2. Römer, P. H., and Joseph, K.: München. med. Wchnschr., 1910, lvii, 568. Levaditi, and Landsteiner: Compt. rend. Soc. de biol., 1910, lxviii, 311. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, Seventh Note, THE JOURNAL A. M. A., May 28, 1910, p. 1780.
3. Levaditi and Netter: Presse méd., 1910, xviii, 268. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2).
4. Flexner, Simon, and Lewis, P. A.: Experimental Poliomyelitis in Monkeys, Eighth Note, THE JOURNAL A. M. A., Aug. 20, 1910, p. 662.
5. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2).
6. Flexner, Simon, and Lewis, P. A.: Seventh Note (Footnote 2). Flexner, Simon, The Contribution of Experimental to Human Poliomyelitis, THE JOURNAL A. M. A., Sept. 24, 1910, p. 1105. Flexner, Simon, and Amoss, H. L.: Penetration of the Virus of Poliomyelitis from the Blood into the Cerebrospinal Fluid, Jour. Exper. Med., 1914, xix, 411.

induced poliomyelitis in the monkey, is further indicated by experiments[7] in which, on the one hand, the virus has been injected into the blood under conditions insuring its escape into the meninges and, on the other, when an emulsion of the virus has been introduced directly into the meninges and followed later by the serum injection.

SERUM THERAPY IN MAN

This aspect of the subject has been imperfectly developed up to the present time. Netter[8] was the first to apply the data obtained by experiments on monkeys to the treatment of cases of epidemic poliomyelitis in man. He has published the results obtained in a small series of thirty-five cases which he regarded as highly favorable to the method. He employed the serum from cases of poliomyelitis in which complete recovery from the acute condition has taken place some time — even as long as thirty years — previously. The serum injections were given subdurally as early after the appearance and recognition of the symptoms of poliomyelitis as possible. The dose of the serum, which must, of course, be sterile but need not be inactivated, should be determined by the age of the patient and will, in part, be determined by the quantity of serum available. Probably doses ranging from 5 to 20 c.c. will be found suitable, the injection to be repeated several times at twenty-four hour intervals according to clinical conditions and indications. The effects of the immune serum should be sought in the checking of the progress of the disease, namely, the prevention or minimization of the paralysis when employed in the preparalytic stages, and the arrest of its extension when used in progressing paralytic conditions. Since the immunity substances have been determined by neutralization tests to persist in the blood for many years, it is probable, as Netter has indicated, that persons who have passed through an attack of poliomyelitis many years earlier may be utilized as sources of the serum;[9] reasoning from analogy it would probably be advantageous to prefer persons whose attack was less remote so as to insure as high concentration of the immunity bodies as possible. The conditions surrounding the injection of the serum into the meninges are identical with those observed in the analogous case of epidemic meningitis. Before each dose of serum is injected a suitable quantity of the cerebrospinal fluid is to be withdrawn, and the injections should be made slowly. In choosing the person who is to serve as the source of the blood from which the immune serum is to be derived precaution should of course be taken to secure a healthy donor; it would be advisable to fortify the usual clinical examination by a Wassermann test.

7. Flexner, Simon, and Amoss, H. L.: Localization of the Virus and Pathogenesis of Epidemic Poliomyelitis, Jour. Exper. Med., 1914, xx, 249.

8. Netter, A.: Sérotherapie de la poliomyélite nos résultats chez trente-deux malades: Indications, technique — incidents possibles, Bull. de l'Acad. de méd., Oct. 12, 1915. Netter, A., and Salanier, M.: Deux nouveaux cas de poliomyélite a début méningé guéris par les injections intrarachidiennes de sérum d'anciens malades, Bull. et mém. Soc. méd. d. hôp. de Paris, March 10, 1916.

9. Flexner, Simon: The Contribution of Experimental to Human Poliomyelitis, THE JOURNAL A. M. A., Sept. 24, 1910, p. 1105.

The Prevention of Tuberculosis.—When mankind fully appreciates the fact that three out of probably every four of the so-called delicate people we know are delicate because they have tubercle bacilli, active or inactive, latent or concealed, in open or closed tissues, though most often unknown to themselves, then we may, and doubtless will, begin to arrive in perceptive visibility of the, as yet, delayed solution of the tuberculosis problem.—Way.

Therapeutics

BLOOD PRESSURE

(Continued from page 511)

THE EFFECT OF DRUGS ON BLOOD PRESSURE

Free catharsis is a well established and valuable method of relieving the heart in many cases of broken compensation, and in cases with high blood pressure even while compensation is still good, salines administered once or twice a week assist in elimination, and in the reduction of blood pressure.

However, profuse purging in heart disease may be followed by unfavorable symptoms, especially when the systolic blood pressure is low. When there is hypotension, or when the diastolic pressure is high and the venous pressure is high, and when there is edema or effusion, watery catharsis should be caused only after due consideration, and always with a careful watching of the effect on the heart and blood pressure. The blood pressure is lowered by such catharsis, and the heart is often slowed. Neilson and Hyland[45] studied the effect of purging on the heart and blood pressure, and were inclined to the view that in serious heart conditions brisk purging should not be done. They think that the slowing of the heart after such purging may be due to an increased viscosity of the blood, or perhaps to a reflex irritation from the purgative on the intestinal canal.

Pilcher and Sollmann[46] have shown that the fall of blood pressure after the administration of nitrites is mostly due to the action of these drugs on the peripheral vessels. Chloroform, of course, depressed the vasomotor center, but ether had no effect on this center, or slightly stimulated it. Such stimulation, however, Pilcher and Sollmann believe may be secondary to asphyxia. Nicotin they found to cause intense stimulation of the vasomotor center. Ergot and hydrastis and its alkaloids seem to have no effect on the vasomotor center. Strophanthus acted on this center only moderately, and digitalis very slightly, if at all. Camphor in doses large enough to cause convulsions stimulated the vasomotor center. In smaller doses it generally stimulated the center moderately, but not always. Even when this center was stimulated, however, the camphor did not necessarily increase the blood pressure. The rise in blood pressure from epinephrin is due entirely to its action on the peripheral blood vessels and the heart. It has no action on the vasomotor center. They found that strychnin in large doses may stimulate the vasomotor center moderately, but usually it did not act on this center unless the patient was asphyxiated; then it acted intensely. The conclusion to be drawn from their experiments is that when there is asphyxia, increased venous pressure, and also a rising blood pressure from the stimulation of carbon dioxid, strychnin is contraindicated.

It should be recognized that digitalis very frequently not only does not raise blood pressure, but also may lower it, especially in aortic insufficiency and when there is cyanosis. Even with some forms of angina pectoris, digitalis in small doses may reduce the frequency of the pain. This decrease of pain following the use of digitalis has in some cases been ascribed to the improvement of coronary circulation and result-

45. Neilson, C. H., and Hyland, R. F.: The Effect of Strong Purging on Blood Pressure and the Heart, THE JOURNAL A. M. A., Feb. 8, 1913, p. 436.

46. Pilcher and Sollmann: Jour. Pharmacol. and Exper. Therap., 1915, vi, 323.

ing better nutrition of heart muscle. Of course under these conditions the action of digitalis must be carefully watched, and it should not be given too long.

Although sodium nitrite and nitroglycerin have but a short period of action, in laboratory experimentation, in lowering the blood pressure, when given repeatedly four or five times a day the blood pressure is lowered in very many instances by these drugs. Sometimes when the blood pressure is not lowered, there is relief of tension in the head from high pressure, and the patient feels better. There is also relief of the heart when it is laboring to overcome a high resistance. One drop of the official spirit of nitroglycerin on the tongue will cause a lowering in the peripheral pressure pulse, the radial pulse becoming larger and fuller. This effect begins in three minutes or less, reaches its maximum in about five minutes, and the effect passes off in fifteen minutes or more.[47]

It has been stated that iodids are of no value except in syphilitic arteriosclerosis, but iodids in small doses are stimulant to the thyroid gland, and the thyroid secretes a vasodilating substance. Therefore, the use of either iodids or thyroid would seem to be justified in many instances of high blood pressure.

Fairlee[48] has studied the effect of chloroform and ether on blood pressure, and finds that there is a fall of pressure throughout the administration of chloroform, and but little alteration of the blood pressure during the administration of ether. It may cause a slight rise, or it may cause a slight fall, but changes in pressure with ether are not marked. When there is slight surgical shock present, as from some injury, they found that chloroform would lower the pressure considerably. Hence it would seem that chloroform should not be used as an anesthetic after serious injuries.

THE EFFECT OF DRUGS ON VENOUS BLOOD PRESSURE

Capps and Matthews[49] have shown that even with first class preparations of digitalis, there may be only a moderate gradual rise in arterial pressure, but not much change in venous pressure. Venous pressure was not much affected by small doses of epinephrin, but with large doses it rose from 10 to 80 mm. Pituitary extract acts somewhat similarly to epinephrin. Caffein, though raising the arterial pressure, did not influence the venous pressure. Strychnin did not raise either pressure until the dose was sufficient to cause muscular contractions. They found that the nitrites caused a fall in venous pressure as well as arterial pressure, although the heart might be accelerated and more regular. They think that the nitrites act by depressing the nerve endings in the veins as well as the arteries. Morphin they found did not act on the venous pressure, although it lowered arterial tension, in ordinary doses of 1/8 or 1/6 grain; but with doses of from 1/4 to 1/2 grain, both arterial and venous pressures were lowered. They found that alcohol in ordinary doses did not influence the venous pressure, although it lowered the arterial pressure; but very large doses lowered the arterial and raised the venous pressure. They think that when the venous pressure is increased only by large doses of epinephrin, pituitary extract and alcohol, the effect is due to failure of the heart, although it may be due to an increase of carbon dioxid in the blood, in other words, to asphyxia.

47. Hewlett, A. W., and Zwaluwenburg, J. G. Van: The Pulse Flow in the Brachial Artery, Arch. Int. Med., July, 1913, p. 1.
48. Fairlee: Lancet, London, Feb. 28, 1914.
49. Capps, J. A., and Matthews, S. A.: Venous Blood Pressure as Influenced by the Drugs Employed in Cardiovascular Therapy, THE JOURNAL A. M. A., Aug. 9, 1913, p. 388.

HYPERTENSION

Arterial hypertension may be divided into stages. In the first stage the arteries are healthy, but the tone, owing to contraction of the muscular walls, is too great. This condition or stage has been termed "chronic arterial hypertension." This condition may be due to irritants circulating in the blood, to nervous tension, to incipient chronic interstitial nephritis, or may be the first stage of sclerosis of the arteries. If from any cause this hypertension persists, the muscular coats of the arteries will become more or less hypertrophied, and sooner or later degenerative changes begin in the intima, and finally fibrosis occurs in the external coat of the arteries; in other words, arteriosclerosis is in evidence. If the patient lives with this arteriosclerosis, a later stage of the arterial disease may occur which has been termed atheroma, with thickening, and possibly calcareous deposits in some parts of the walls of the vessels, while in other parts the coats become thinner and insufficient. At this stage the heart, which has already shown some trouble, becomes unable to force the blood properly against this enormous resistance of inelastic vessels and the blood pressure begins to fail as the left ventricle weakens. Edema, failing heart, perhaps aneurysms, peripheral obstruction, or hemorrhages are the final conditions in this chronic disease of arteriosclerosis.

Riesman[50] divides hypertension into four classes: hypertension without apparent nephritis or arterial disease; hypertension with arteriosclerosis; hypertension with nephritis, and hypertension with both arteriosclerosis and nephritis. These classes are given here in the order of the seriousness of the prognosis.

ETIOLOGY

One of the most common causes of hypertension is due to excess of eating and drinking. The products caused by maldigestion of proteins, and the toxins formed and absorbed especially from meat proteins, particularly when the excretions are insufficient, are the most frequent causes of hypertension. Whatever other element or condition may have caused increased blood pressure, the first step toward improving and lowering this pressure is to diminish the amount of meat eaten or to remove it entirely from the diet. In pregnancy where there is increased metabolic change, when the proteins are not well or properly cared for in gout, and when there is intestinal fermentation or putrefaction, hypertension is likely to occur. The increased blood pressure in these cases is directly due to irritation of the toxins on the blood vessel walls.

While alcohol does not tend to raise arterial blood pressure, in large amounts it may raise the venous pressure. Also, by causing an abundant appetite and thus increasing the amount of food taken, by interfering with the activity of the liver, and by impairing the intestinal digestion, it can indirectly disturb the metabolism and cause enough toxin to be produced to raise the blood pressure.

Any drug or substance that raises the blood pressure by stimulating the vasomotor center or the arterioles, when constantly repeated, will be a cause of hypertension. This is particularly true of caffein and nicotin. Also, anything that might stimulate, or that does stimulate, the suprarenal glands will cause a continued high blood pressure. It is quite probable that in many cases of gout the suprarenals are hypersecreting and

50. Riesman: Pennsylvania Med. Jour., December, 1914, p. 193.

it has been shown by Cannon, Aub and Binger[51] that nicotin in small doses increases the suprarenal secretion. Therefore, nicotin becomes a decided cause of hypertension and arteriosclerosis.

Thayer found that heavy work is the cause of about two thirds of all cases of arteriosclerosis, and one of the functions of the suprarenals is to destroy the waste products of muscular activity; hence these glands, in these cases, are hypersecreting. Furthermore, the reason that many infections are followed later by arteriosclerosis may be the fact that the suprarenals have been stimulated to hypertrophy and hypersecrete.

Many persons in middle life, and especially women at the time of the menopause, show hypertension without arterial or kidney reason. At this time of life the thyroid is disturbed, and often, especially if weight is added, it is not secreting sufficiently. Whether, with the polyglandular disturbance of the menopause the suprarenals are excited and hypersecreting, or whether they are simply relatively secreting more vasopressor substance than is combated by the vasodilator substance from the thyroid, cannot be determined. These women are energetic, and look full of health and full of strength, but their faces frequently flush, sometimes they are dizzy, and the systolic blood pressure is too high. Reisman has pointed out that these patients are likely to have very large breasts, and there is reason to believe that we must begin to study more carefully the effect of large breasts on the metabolism of girls and women. There certainly is an internal secretion of some importance furnished by these glands.

In hyperthyroidism at first the blood pressure may be lowered on account of the increased physiologic secretion of the thyroid gland. Later the blood pressure may be raised by stimulation of the suprarenals, or it may become raised from the irritated and stimulated heart becoming hypertrophied. If the heart is normal the ventricles should hypertrophy with the increased work that they are under; and the blood pressure could increase for this reason. Later in exophthalmic goiter the heart muscle may become degenerated, a chronic myocarditis, and the ventricles may slightly dilate. At this time the blood pressure is lowered. When such a condition has occurred, the heart bears thyroidectomy badly; hence an operation on this gland should, if possible, be performed before the heart muscle has become injured. If the heart shows signs of loss of power, minor operations to cut off the blood supply of the thyroid should first be done, and the patient's heart allowed to improve before a thyroidectomy is performed.

Men with hypertension without kidney or arterial excuse are likely to have been athletes, or to have done some severe competitive work, or, as above stated, to have labored hard, or to have worked at high tension, or in great excitement, or with mental worry, all of which tend, as long as there is health, to increase the blood pressure. These men may add weight from the age of 40 on, or they may be thin and wiry. Besides the hypertension there is likely to be a too sturdily acting heart, which is often hypertrophied, and there is an accentuated closure of the aortic valve. There may be dizziness, or no head symptoms at all. Nicotin is likely to be an etiologic factor in this class.

These women and these men may all be improved by proper treatment, and the condition may not develop into arteriosclerosis or nephritis.

51. Cannon, Aub and Binger: Jour. Pharmacol. and Exper. Therap., March, 1912.

Neurotic conditions, and in some instances neurasthenic conditions, may show a blood pressure higher than normal. Lead may be a cause of increased blood pressure, and diabetics occasionally have a high pressure, although more frequently there is a lowering of blood pressure in diabetes.

Riesman believes that syphilis is the most common cause of hypertension and arteriosclerosis without renal disease. When arteriosclerosis and renal disease are combined, of course the highest systolic readings occur. He thinks that when high tension occurs under 40 years of age, kidney disease is generally the cause. Of course it may be the only cause later in life.

High blood pressure due to syphilitic conditions may be greatly improved by the proper treatment, although some one or more blood vessels are likely to have been seriously damaged. Although these patients may live for many years, they are likely to have an apoplexy, cerebral disease or an aneurysm.

While hypertension is not a disease, and while it often should not be combated, still, as it is always the forerunner of more serious trouble, there can be no excuse for not most seriously considering it and generally attempting its reduction. At the moment high tension is discovered, there may be no special symptoms; but troublesome symptoms are always pending, and while the patient need not be unduly alarmed, there is no excuse for not rearranging the individual's life so as to prolong it. This is not to state that every high tension must be lowered, but every hypertension must be studied and a safer systolic pressure caused if it is possible without interfering with the person's efficiency. A high diastolic pressure, one above 105, certainly must receive immediate attention, and a diastolic pressure of 110 must be lowered, if possible. On the other hand, a high systolic pressure without a high diastolic pressure should not be rapidly lowered, else depression will be caused.

(To be continued)

New and Nonofficial Remedies

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION. THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT AND IN PART ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE PUBLICATION IN THE BOOK "NEW AND NONOFFICIAL REMEDIES."

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT, SO FAR AS KNOWN, IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

ARBUTIN-ABBOTT.—A non-proprietary brand complying with the standards for arbutin (see N. N. R., 1916, p. 40).

Manufactured by the Abbott Laboratories, Chicago.

AMPULS MERCURY IODIDE RED, 1 PER CENT. IN OIL-SQUIBB.

This dosage form of mercuric iodide, U. S. P., has been accepted:

Each ampule contains 1 Cc. of a solution of red mercuric iodide and anesthesin, each 0.01 Gm. (⅙ grain) in a neutral fatty oil. Prepared by E. R. Squibb & Sons, New York.

MEDICAL EDUCATION IN THE UNITED STATES

ANNUAL PRESENTATION OF EDUCATIONAL DATA FOR 1916 BY THE COUNCIL ON MEDICAL EDUCATION

The tabulated statistics herewith presented are for the year ending June 30, 1916, and are based on reports received from the medical colleges or from other reliable sources. We take pleasure in acknowledging here the courtesy and cooperation of the officers of the colleges who have made the compilation of these complete statistics possible.

STATISTICS OF COLLEGES

Table 1 (pages 588-590) gives the colleges in session during 1915-1916; the population of the city; the rating given to the college in the latest classification of the Council on Medical Education; the number of students, men and women, registered during the year; the number of 1916 graduates, men and women; the number of graduates holding collegiate degrees; the number of teachers for each college; the number of weeks of actual work in the college year; the total fees for each year; the executive officer of the college, and the dates of beginning and ending of the next session. The figures in heavy-faced type show the totals by states. Beginning on page 609 are given essential facts concerning all medical colleges arranged by states.

HOME STATES OF MEDICAL STUDENTS

Table 2, on pages 592-593, shows from what states the students came who were in attendance at each medical college during the session of 1915-1916. The influence of the proximity of the medical school is seen in the fact that states having medical colleges contribute more students in proportion to the population than those which have no colleges. This is shown by the dark zone of figures running diagonally down the page. A comparison of this table with the large tables based on state board examinations,[1] which show the distribution of the alumni of each college, is interesting. The college which has widely distributed alumni usually has a student body from an equally large number of states.

The state furnishing the largest number of students this year was New York, with 2,030. Illinois contributed 1,177 and Pennsylvania, 1,099. The next states, in the order of the number of students contributed, are: Ohio, 683; Massachusetts, 601; Missouri, 510; Texas, 489; North Carolina, 420, and Michigan, 416. Four states had less than 20 each, these being Arizona, 12; New Mexico, 11; Wyoming, 6, and Nevada, 3. There were 95 students from Hawaii, Porto Rico and the Philippine Islands, and 400 students from foreign countries.

In Table 3, on page 596, the students enrolled in each college are shown by classes. This permits one to see whether the attendance at each college is increasing or decreasing. The total attendance for the first year was 3,582 as compared with 3,373 freshmen last year. The second year attendance was 3,094 as compared with 3,919 last year. The enrolments for the third and fourth years, respectively, were 3,559 and 3,727 as compared with 3,675 and 3,864 last year. The freshman class enrolment is the only one, therefore, which shows an increase over that of last year.

MEDICAL SCHOOL ENROLMENT FOR TWELVE YEARS

Table 4 has been added this year to show the enrolments of medical students for the last twelve years in the medical schools still existing. This is interesting since it shows the effect of the higher entrance standards. The care with which the higher requirement was enforced is suggested by the fact that in some the falling off was very marked while in others there was scarcely any change. It is noteworthy that within a few years after the beginning of the higher requirement almost invariably the enrolments are again increased. It is quite probable that the total enrolment of students in all medical colleges has reached its lowest point and that within a year or two there will be an increase.

NUMBER OF MEDICAL STUDENTS

The total number of medical students (matriculants) in the United States for the year ending June 30, 1916, excluding premedical, special and postgraduate students, was 14,022, a decrease of 869 below last year, a decrease of 2,480 below 1914 and a decrease of 3,003 below 1913, and a decrease of 14,120 (50.2 per cent.) below 1904, when 28,142, the highest number of students, were enrolled. (See Table 4.) Of the total number of students, 13,121 were in attendance at the nonsectarian (regular) colleges, 638 at the homeopathic and 263 at the eclectic colleges. The attendance

TABLE 5.—MEDICAL COLLEGE ATTENDANCE

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880.....	9,776	1,220	830	...	...	11,826
1890.....	13,521	1,164	719	...	...	15,404
1900.....	22,710	1,909	522	...	...	25,171
1901.....	23,846	1,663	664	80	144	26,417
1902.....	24,878	1,617	765	91	150	27,501
1903.....	24,930	1,498	848	149	190	27,615
1904.....	23,602	1,309	1,014	123	234	28,142
1905.....	24,119	1,104	578	114	232	26,147
1906.....	23,116	1,085	644	110	249	25,204
1907.....	22,303	1,039	545	97	292	24,276
1908.....	20,936	891	479	90	206	22,602
1909.....	20,554	809	413	52	227	22,145
1910.....	20,136	867	455	49	19	21,526
1911.....	18,414	890	433	49	...	19,786
1912.....	17,277	827	308	...	...	18,412
1913.....	15,919	850	256	...	...	17,015
1914.....	15,428	794	270	...	...	16,502
1915.....	13,914	736	241	...	...	14,891
1916.....	13,121	638	263	...	...	14,022

1. THE JOURNAL, State Board Number, April 8, 1916, Table A, pages 1196 to 1199, inclusive.

(Continued on page 591)

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City where College is Located. (Census Bureau Estimate of 1915)	Classification by Medical Education	No. of Students Registered 1915-16		Graduates 1916		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1916-17		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1916	Ends 1917	
	ALABAMA																	
1	University of Alabama School of Medicine, Mobile	50,596	A	56	...	18	...	6	6	42	32	160	155	155	175	T. H. Fraser, M.D., Dean	Oct. 5	June 5	1
				56	...	18	...	6	6	42	32	160	155	155	175				
	ARKANSAS																	
2	University of Arkansas Medical Department, Little Rock	55,158	B	55	1	15	1	...		42	33	125	125	125	150	Morgan Smith, M.D., Dean	Sept. 18	May 31	2
				55	1	15	1	...		42	33	125	125	125	150				
	CALIFORNIA																	
3	College of Medical Evangelists, Loma Linda	125	C	67	9	6	3	...	55	35	141	136	136	146	Newton Evans, M.D., Dean	Sept. 11	May 31	3
4	College of Physicians and Surgeons, Los Angeles	465,397	B	132	11	21	2	5	96	36	220	217	202	227	Charles W. Bryson, M.D., Dean	Sept. 5	June 7	4
5	Oakland College of Medicine and Surgery, Oakland	190 833	B	10	3	2	...	1	40	33	195	190	150	150	Edward N. Ewer, M.D., Registrar	Aug. 21	June 1	5
6	College of Physicians and Surgeons of San Francisco	448,507	C	57	6	8	1	1	28	36	165	160	160	185	C. O. Southard, M.D., Secretary	Sept. 4	June 7	6
7	Hahnemann Medical College of the Pacific, San Francisco.—H.[1]	448,507	B	35	6	10	2	...	17	36	...	...	105	137	James W. Ward, M.D., Dean	Aug. 16	May 17	7
8	Leland Stanford Junior University School of Med., San Francisco	448,502	A	77	19	21	3	22	68	34	160	155	150	150	Wm. Ophüls, M.D., Dean	Aug. 30	May 16	8
9	University of California Medical School, San Francisco	448,502	A	165	19	24	5	23	104	36	150	175	160	160	L. S. Schmitt, M.D., Secretary	Aug. 19	May 16	9
	COLORADO																	
10	University of Colorado School of Medicine, Denver	253,161	A	75	4	13	...	8	86	35	85	85	75	75	Charles N. Meader, M.D., Dean	Sept. 11	June 6	10
	CONNECTICUT																	
11	Yale University School of Medicine, New Haven	147,095	A	56	...	6	...	6	76	35	200	170	153	163	George Blumer, M.D., Dean	Sept. 28	June 20	11
	DISTRICT OF COLUMBIA																	
12	Georgetown University School of Medicine, Washington	358,679	A	53	...	7	...	3	91	34	165	150	150	160	George M. Kober, M.D., Dean	Sept. 24	June 13	12
13	George Washington University Medical School, Washington	358,679	A	134	7	30	1	2	85	33	168	168	163	163	W. C. Borden, M.D., Dean	Sept. 27	June 6	13
14	Howard University School of Medicine, Washington	358,679	A	99	1	15	...	7	59	32	137	127	127	134	Edward A. Balloch, M.D., Dean	Oct. 2	June 6	14
	GEORGIA																	
15	Atlanta Medical College, Atlanta	154,873	A	222	...	101	...	5	101	32	172	160	155	180	W. S. Elkin, M.D., Dean	Sept. 25	May 29	15
16	Georgia College of Eclectic Medicine and Surgery, Atlanta.—E.[2]	154,873	C	59	...	29	...	...	...	...	...	...	...	...	...	...	...	16
17	University of Georgia Medical Department, Augusta	49,848	A	54	...	10	...	...	49	34	155	150	150	150	William H. Doughty, Jr., M.D., Dean	Sept. 13	May 30	17
	ILLINOIS																	
18	Chicago College of Medicine and Surgery, Chicago	2,447,045	B	466	22	190	4	4	167	32	155	155	155	155	G. E. Wyneken, M.D., Secretary	Sept. 26	May 27	18
19	Chicago Hospital College of Medicine, Chicago[3]	2,447,045	C	60	...	9	...	...	...	...	...	...	...	...	...	...	...	19
20	Hahnemann Medical College and Hospital of Chicago.—H.	2,447,045	H	77	8	16	2	1	73	33	171	161	176	191	Joseph P. Cobb, M.D., Dean	Sept. 25	June 7	20
21	Jenner Medical College, Chicago[4]	2,447,045	C	88	10	14	1	...	88	34	...	...	...	...	...	...	...	21
22	Loyola University School of Medicine, Chicago[5]	2,447,045	B	294	14	136	6	4	88	34	140	140	140	140	Alfred de Roulet, M.D., Secretary	Sept. 25	June 18	22
23	Northwestern University Medical School, Chicago	2,447,045	A	526	...	42	...	19	124	32	190	195	190	205	Arthur R. Edwards, M.D., Dean	Oct. 3	June 2	23
24	Rush Medical College (University of Chicago)	2,447,045	A	450	38	92	5	84	301	34	185	180	180	195	John M. Dodson, M.D., Dean	Oct. 2	June 13	24
25	University of Illinois College of Medicine, Chicago	2,447,045	A	304	22	103	7	6	145	34	155	160	150	165	William H. Browne, Secretary	Sept. 28	June 13	25
	INDIANA																	
26	Indiana University School of Medicine, Indianapolis	265,578	A	156	...	34	...	28	136	34	100	100	130	130	Charles P. Emerson, M.D., Dean	Sept. 19	June 9	26
	IOWA																	
27	State University of Iowa College of Medicine, Iowa City	10,987	A	149	2	29	...	10	54	35	85	85	85	85	Lee Wallace Dean, M.D., Dean	Sept. 18	June 13	27
28	State University of Iowa College of Homeo. Med., Iowa City.—H.	10,987	A	9	1	...	...	...	27	34	85	85	85	85	George Royal, M.D., Dean	Sept. 18	June 8	28
	KANSAS																	
29	University of Kansas School of Medicine, Rosedale	392,666	A	66	6	10	1	9	61	35	90	90	105	105	M. T. Sudler, M.D., Asso. Dean	Sept. 13	June 6	29
	KENTUCKY																	
30	University of Louisville Medical Department, Louisville	237,012	A	149	...	54	...	5	101	33	175	176	179	182	Henry E. Tuley, M.D., Dean	Sept. 26	June 7	30
	LOUISIANA																	
31	Tulane University of Louisiana School of Medicine, New Orleans	396,484	A	264	1	75	...	9	116	33	190	190	185	215	Isadore Dyer, M.D., Dean	Sept. 27	June 6	31
	MAINE																	
32	Bowdoin Medical School, Brunswick-Portland	62,011	A	69	...	10	...	6	61	33	115	115	115	115	Addison S. Thayer, M.D., Dean	Oct. 12	June 21	32

	MARYLAND			**933**	**33**	**199**	**6**	**95**											
33	Johns Hopkins University Medical Department, Baltimore	584,605	A	315	38	76	6	82	156	33	240	200	200	200	J. Whitridge Williams, M.D., Dean	Oct. 3	June 12	33
34	Univ. of Maryland Sch. of Med. & Coll. of Phys. & Surgs., Baltimore	584,605	A	368	...	123	...	13	204	32	170	165	165	195	J. M. H. Rowland, M.D., Dean	Oct. 2	June 1	34
	MASSACHUSETTS																		
	787	**49**	**157**	**17**	**60**														
35	Boston University School of Medicine, Boston.—H	745,139	A	63	12	12	6	4	62	32	170	157	151	150	John P. Sutherland, M.D., Dean	Oct. 5	June 6	35
36	College of Physicians and Surgeons, Boston*	745,139	C	43	4	11	1	...	...	...	...	...	...	...	.....	.....	.....	36
37	Medical School of Harvard University, Boston	745,139	A	334	...	74	...	72	236	36	225	225	225	225	E. H. Bradford, M.D., Dean	Sept. 25	June 21	37
38	Tufts College Medical School, Boston	745,139	A	347	33	60	10	4	122	35	170	155	155	155	Charles P. Painter, M.D., Dean	Sept. 21	June 15	38
	MICHIGAN			**539**	**10**	**113**	**8**	**53**											
39	University of Michigan Medical School, Ann Arbor	14,084	A	506	10	57	7	50	93	35	113	92	107	67	Victor C. Vaughan, M.D., Dean	Oct. 4	June 28	39
40	University of Michigan Homeo. Medical School, Ann Arbor.—H	14,084	A	33	1	7	1	3	26	35	113	92	107	67	W. B. Hinsdale, M.D., Dean	Oct. 4	June 28	40
41	Detroit College of Medicine and Surgery, Detroit	554,717	A	180	...	49	...	...	171	32	155	150	150	130	Joseph H. Hathaway, M.D., Secretary	Sept. 25	May 31	41
	MINNESOTA			**246**	**7**	**49**	**2**	**42**											
42	University of Minnesota Medical School, Minneapolis	353,460	A	246	7	49	2	42	147	34	150	150	150	150	Elias P. Lyon, M.D., Dean	Sept. 27	June 15	42
	MISSISSIPPI			**55**	...	...	...	...											
43	University of Mississippi Department of Medicine, Oxford*	2,614	A	55	...	...	...	...	21	32	83	83	...	...	W. S. Leathers, M.D., Dean	Sept. 20	May 29	43
	MISSOURI			**665**	**18**	**135**	**5**	**22**											
44	University of Missouri School of Medicine, Columbia*	11,371	A	71	3	...	...	...	30	34	45	45	...	...	Guy L. Noyes, M.D., Dean	Sept. 18	June 7	44
45	Kansas City College of Medicine and Surgery, Kansas City.—E	268,753	.....	98	10	11	2	...	...	...	...	...	...	...	.....	.....	.....	45
46	Southwestern School of Medicine and Hospital, Kansas City.—H*	386,733	C	18	2	6	2	1	...	...	...	...	...	...	.....	.....	.....	46
47	National University of Arts and Sciences Med. Dept., St. Louis	745,188	C	145	4	52	2	...	61	34	140	135	135	135	J. J. Link, M.D., President	Sept. 20	June 10	47
48	St. Louis University School of Medicine, St. Louis	745,188	A	231	...	44	...	4	131	32	155	155	155	165	Hanau W. Loeb, M.D., Dean	Oct. 2	June 1	48
49	Washington University Medical School, St. Louis	745,188	A	92	...	17	...	17	94	34	155	150	150	155	P. A. Shaffer, M.D., Dean	Sept. 28	June 14	49
	NEBRASKA			**268**	**9**	**68**	**3**	**20**											
50	Lincoln Medical College, Lincoln.—E*	46,028	C	23	2	7	2	...	...	...	...	...	...	...	.....	.....	.....	50
51	John A. Creighton Medical College, Omaha	135,455	B	127	1	41	...	3	53	33	140	135	135	145	B. M. Riley, M.D., Secretary	Sept. 22	June 2	51
52	University of Nebraska College of Medicine, Omaha	135,455	A	118	5	20	1	19	59	34	135	130	130	130	Irving S. Cutter, M.D., Dean	Sept. 18	June 9	52
	NEW HAMPSHIRE			**33**	...	...	...	...											
53	Dartmouth Medical School, Hanover*	1,340	A	33	...	...	...	...	12	36	174	175	...	...	John M. Gile, M.D., Dean	Sept. 21	June 20	53
	NEW YORK			**2073**	**88**	**440**	**16**	**120**											
54	Albany Medical College, Albany	103,580	A	148	...	48	...	2	71	33	165	165	165	165	Thomas Ordway, M.D., Dean	Sept. 25	June 8	54
55	University of Buffalo Department of Medicine, Buffalo	461,335	A	166	15	34	1	...	107	33	185	160	140	140	Thos. H. McKee, M.D., Dean	Sept. 25	June 8	55
56	Columbia University College of Phys. and Surgs., New York City	5,468,190	A	419	...	73	...	57	250	33	255	250	250	275	Samuel W. Lambert, M.D., Dean	Sept. 27	June 6	56
57	Cornell University Medical College, New York City	5,468,190	A	130	21	30	4	30	132	34	150	185	185	200	William M. Polk, M.D., Dean	Sept. 27	June 4	57
58	Fordham University School of Medicine, New York City	5,468,190	A	256	...	42	...	5	110	36	216	216	212	210	William P. Healy, M.D., Dean	Sept. 29	June 11	58
59	Long Island College Hospital, Brooklyn	881,065	A	272	...	84	...	2	127	32	210	205	200	200	Otto V. Huffman, M.D., Secretary	Sept. 25	June 1	59
60	New York Homeopathic Medical College and Flower Hosp.—H	5,468,190	B	177	...	63	...	6	81	33	195	185	175	195	Royal S. Copeland, M.D., Dean	Sept. 26	June 7	60
61	New York Medical College and Hospital for Women.—H	5,468,190	C	...	...	47	...	11	73	33	180	175	160	180	Cornelia C. Brandt, M.D., Dean	Sept. 20	June 1	61
62	University and Bellevue Hospital Medical College, New York City	5,468,190	A	305	...	46	...	4	180	34	205	200	200	225	Samuel A. Brown, M.D., Dean	Sept. 20	June 6	62
63	Syracuse University College of Medicine, Syracuse	152,584	A	110	5	24	...	14	80	36	175	175	175	175	John L. Heffron, M.D., Dean	Sept. 19	June 13	63
	NORTH CAROLINA			**145**	**1**	**8**	...	...											
64	University of North Carolina School of Medicine, Chapel Hill*	1,449	A	76	1	...	...	...	25	35	120	125	...	...	Isaac Hall Manning, M.D., Dean	Sept. 12	June 6	64
65	North Carolina Medical College, Charlotte*†	38,887	B	30	...	8	...	...	...	...	...	...	...	...	.....	.....	.....	65
66	Leonard Medical School, Raleigh*	19,833	B	5	...	...	...	...	5	29	30	30	...	...	George H. Stoddard, M.D., Dean	Sept. 27	May 9	66
67	Wake Forest College School of Medicine, Wake Forest*	1,443	A	34	...	...	...	...	13	35	163	163	...	...	E. B. Earnshaw, Secretary	Sept. 5	May 25	67
	NORTH DAKOTA			**33**	...	...	...	...											
68	Univ. of North Dakota School of Med., University (Grand Forks)*	14,827	A	33	...	...	...	...	18	35	50	50	...	...	Harley E. French, M.D., Dean	Sept. 26	June 20	68
	OHIO			**570**	**21**	**100**	**7**	**60**											
69	Eclectic Medical College, Cincinnati.—E	406,706	B	93	8	23	5	...	45	32	125	120	120	120	John K. Scudder, M.D., Secretary	Sept. 14	May 14	69
70	University of Cincinnati College of Medicine	406,703	A	79	9	21	1	9	141	34	150	150	150	170	Christian R. Holmes, M.D., Dean	Oct. 2	June 16	70
71	Western Reserve University School of Medicine, Cleveland	656,975	A	178	...	49	...	49	96	34	162	155	150	155	F. C. Waite, Ph.D., Secretary	Sept. 20	June 14	71
72	Ohio State University College of Medicine, Columbus	209,722	A	182	3	60	1	2	98	36	150	150	150	155	Eugene F. McCampbell, M.D., Dean	Sept. 19	June 23	72
73	Ohio State University College of Homeo. Medicine, Columbus.—H	209,722	C	38	1	7	...	...	17	36	150	150	150	150	Claude A. Burrett, M.D., Dean	Sept. 19	June 23	73
	OKLAHOMA			**74**	**1**	**20**	...	**3**											
74	University of Oklahoma School of Medicine, Norman-Oklahoma City	88,156	B	74	1	20	...	3	50	34	55	43	25	25	Leroy Long, M.D., Dean	Sept. 19	June 5	74
	OREGON			**78**	**3**	**16**	...	**2**											
75	University of Oregon Department of Medicine, Portland	272,833	A	78	3	16	...	2	60	32	155	150	150	150	K. A. J. McKenzie, M.D., Dean	Oct. 1	June 7	75

H.—Homeopathic; E.—Eclectic.

* Give only the first two years of the medical course.

† Gives the first three years of the five-year medical course.

TABLE 1.—STATISTICS OF MEDICAL COLLEGES IN THE UNITED STATES AND CANADA—(Concluded)

Marginal Number	NAME AND LOCATION OF COLLEGE	Population of City or Town College Located. (Census Bureau Estimate of 1915)	Classification by Medical Education	No. of Students Registered 1915-16		Graduates 1916		Grads. with A.B., B.S. or Ph.B.	Number of Teachers	Weeks in College Year	Total Fees (Dollars)				Executive Officer	Session of 1916-17		Marginal Number
				Men	Women	Men	Women				1st year	2d year	3d year	4th year		Begins 1916	Ends 1917	
	PENNSYLVANIA			1494	67	372	16	82										
76	Hahnemann Medical College and Hospital of Philadelphia.—H.	1,683,664	A	98	...	20	...	5	69	32	180	180	180	180	Wm. A. Pearson, M.D., Dean	Oct. 1	May 31	76
77	Jefferson Medical College of Philadelphia	1,683,664	A	538	...	162	...	30	148	33	200	200	200	200	Ross V. Patterson, M.D., Dean	Sept. 25	June 2	77
78	Medico-Chirurgical College of Philadelphia[11]	1,683,664	A	306	...	83	...	4	65	30								78
79	Temple University Department of Medicine, Philadelphia	1,683,664	B	41	5	11	2	2	85	30	176	171	161	171	H. T. Williams, M.D., Registrar	Oct. 18	June 9	79
80	University of Pennsylvania School of Medicine, Philadelphia	1,683,664	A	317	...	74	...	50	179	35	235	230	230	214	William Pepper, M.D., Dean	Sept. 29	June 20	80
81	Woman's Medical College of Pennsylvania, Philadelphia	1,683,664	A	...	55	...	17	2	59	34	192	176	182	179	Clara Marshall, M.D., Dean	Sept. 30	June 6	81
82	University of Pittsburgh School of Medicine, Pittsburgh	571,984	A	104	7	22	...	10	108	34	265	250	250	255	Thomas S. Arbuthnot, M.D., Dean	Sept. 25	June 13	82
	SOUTH CAROLINA			61	...	16	...	5										
83	Medical College of the State of South Carolina, Charleston	60,427	A	61	...	16	...	5	60	32	140	140	140	140	Robert Wilson, Jr., M.D., Dean	Oct. 2	June 7	83
	SOUTH DAKOTA			12	...	...	...	...										
84	University of South Dakota College of Medicine, Vermilion*	2,187	A	12	...	...	...	...	10	35	60	60	...	...	Christian P. Lommen, B.S., Dean	Sept. 19	June 14	84
	TENNESSEE			711	9	282	4	30										
85	Lincoln Memorial University Medical Department, Knoxville[12]	28,300	B	21	...	14	...	...										85
86	University of Tennessee College of Medicine, Memphis	146,113	A	156	3	39	1	7	110	34	105	100	100	125	H. T. Brooks, M.D., Dean	Sept. 21	June 6	86
87	University of West Tennessee College of Med. and Surg., Memphis[13]	146,113	C	27	...	9	...	2	22	30	55	55	55	65	M. V. Lyal, M.D., Dean	Sept. 14	May 3	87
88	Meharry Medical College, Nashville	114,978	B	295	6	90	3	9	25	30	70	70	70	80	George W. Hubbard, M.D., Dean	Sept. 19	May 3	88
89	Vanderbilt University Medical Department, Nashville	115,978	A	212	...	90	...	21	84	33	165	160	160	185	Lucius E. Burch, M.D., Dean	Oct. 2	June 13	89
	TEXAS			312	12	66	1	16										
90	Baylor University College of Medicine, Dallas	118,482	A	58	1	25	...	3	53	32	120	115	115	125	Edward H. Cary, M.D., Dean	Oct. 2	May 31	90
91	Fort Worth School of Medicine, Fort Worth	94,494	B	50	...	7	...	2	73	34	114	112	108	125	Samuel A. Woodward, M.D., Dean	Sept. 18	June 7	91
92	University of Texas Department of Medicine, Galveston	41,076	A	204	11	34	1	11	32	32	60	25	15	10	William S. Carter, M.D., Dean	Oct. 1	May 31	92
	UTAH			23	...	...	...	...										
93	University of Utah School of Medicine, Salt Lake City*	113,567	A	23	...	...	...	...	22	34	74	79	...	...	Perry G. Snow, M.D., Dean	Sept. 18	June 7	93
	VERMONT			76	...	13	...	1										
94	University of Vermont College of Medicine, Burlington	21,247	A	76	...	13	...	1	45	36	145	145	145	170	H. C. Tinkham, M.D., Dean	Sept. 27	June 27	94
	VIRGINIA			370	...	104	...	10										
95	Medical College of Virginia, Richmond	154,674	A	290	...	83	...	8	122	34	164	164	164	164	Stuart McGuire, M.D., Dean	Sept. 20	June 5	95
96	University of Virginia Department of Medicine, Charlottesville	6,765	A	114	...	21	...	11	25	36	150	140	140	140	Theodore Hough, M.D., Dean	Sept. 14	June 13	96
	WEST VIRGINIA			17	...	...	...	...										
97	West Virginia University School of Medicine, Morgantown*	12,239	B	17	...	...	...	11	35	33	10	...	...	...	John N. Simpson, M.D., Dean	Sept. 18	June 13	97
	WISCONSIN			177	11	46	1	2										
98	University of Wisconsin Medical School, Madison*	30,084	A	91	10	...	...	...	30	36	70	70	...	...	Charles R. Bardeen, M.D., Dean	Sept. 18	June 20	98
99	Marquette University School of Medicine, Milwaukee	428,062	A	86	1	45	1	2	105	36	175	170	170	195	J. Van de Erve, M.D., Asso. Dean	Sept. 18	June 14	99
	CANADA			1687	47	202	4	30										
100	University of Alberta Faculty of Medicine, Edmonton, Alta.†	60,000	...	39	2	...	...	...	15	30	60	85	85	...	Cecil E. Race, A.B., Registrar	Oct. 2	May 16	100
101	Dalhousie University Faculty of Medicine, Halifax, N. S.	46,619	B	62	6	11	1	...	38	32	110	110	110	110	D. Fraser Harris, M.D., Secretary	Sept. 13	May 10	101
102	Queen's University Faculty of Medicine, Kingston, Ont.	18,874	C	204	...	11	...	4	39	30	105	105	105	105	J. C. Connell, M.D., Dean	Sept. 13	April 25	102
103	University of Toronto Faculty of Medicine, Toronto, Ont.	376,538	A	491	36	90	3	13	185	32	150	150	150	150	A. Primrose, M.D., Dean	Sept. 26	May 26	103
104	Western University Faculty of Medicine, London, Ont.	46,300	C	68	...	16	...	3	50	30	120	115	115	115	Paul C. McKibbon, Secretary	Oct. 2	May 18	104
105	McGill University Faculty of Medicine, Montreal, Que.	473,712	A	317	...	78	...	6	131	32	174	174	181	174	John W. Scane, M.D., Registrar	Oct. 1	June 6	105
106	Montreal School of Medicine and Surgery, Montreal, Que.	473,712	B	173	...	17	...	...	75	36	110	118	126	138	L. D. Mignault, Registrar	Oct. 1	June 30	106
107	Laval University Faculty of Medicine, Quebec, Que.	78,190	B	81	...	10	...	8	24	34	60	60	60	60	Edwin Turcot, M.D., Dean	Sept. 12	June 1	107
108	University of Manitoba, Manitoba Medical College, Winnipeg	200,000	B	132	2	19	...	5	58	28	155	150	150	150	H. H. Chown, M.D., Dean	Sept. 27	May 1	108

H.—Homeopathic; E.—Eclectic. * Give only the first two years of the medical course. † Gives the first three years of the five-year medical course.

1. Has merged with the University of California Medical School, but is continuing until the three remaining classes have been graduated.
2. This college is reported to have been closed and its building has been leased for other purposes.
3. No reports obtained. Figures are for session of 1914-1915. It is not known whether the college will reopen. Official reports show this college is not recognized by the licensing boards of thirty-two states.
4. A night school advertising as an "accredited" institution. Official reports show it is not recognized by the licensing boards of thirty-two states.
5. Heretofore known as the Bennett Medical College.
6. Official reports show this college is not recognized by the licensing boards of thirty-three states.
7. This is an offshoot from the Eclectic Medical University and apparently took all the students, since neither students nor graduates are reported for the latter.
8. This is the successor to the Kansas City Hahnemann Medical College and occupies the same building. It has not been learned whether the school will reopen. It is reported as not in good standing with the Missouri State Board of Health.
9. It has not been learned whether this college will reopen. Reported not recognized by the licensing boards of twenty-nine states.
10. Merged in 1914 with the Medical College of Virginia, but retains a nominal existence until 1917, when its last class will graduate.
11. Has been merged with the University of Pennsylvania Medical School. Will hereafter be known as the "Medico-Chirurgical College and Hospital, Graduate School of Medicine of the University of Pennsylvania."
12. Merged in 1914 with the University of Tennessee College of Medicine, but retains a nominal existence until 1917, when its last class will graduate.
13. A school for the colored race. It has been reported as not recognized by the licensing boards of thirty-four states.

(Continued from page 587)

at the nonsectarian colleges shows a decrease of 793 below that of last year, a decrease of 2,317 below 1914, and a decrease of 11,809 (47.4 per cent.) below 1903, when 24,930, the largest number of nonsectarian students, were enrolled. In the homeopathic colleges there was a decrease of 98 below the attendance of last year, a decrease of 156 below 1914 and a decrease of 1,271 (66.6 per cent.) below 1900, when 1,909, the largest number of homeopathic students, were enrolled. The eclectic colleges show an increase of 22 over the registration of last year, a decrease of 7 below 1914, and a decrease of 751 (74.1 per cent.) below 1904, when 1,014, the largest number of eclectic students, were enrolled.

NUMBER OF MEDICAL GRADUATES

The total number of graduates for the year ending June 30, 1916, was 3,518, a decrease of only 18 below 1915, a decrease of 76 below 1914, and a decrease of 463 below 1913. The total this year is 2,229 (38.8 per cent.) less than in 1904, when 5,747, the largest number, were graduated.

TABLE 6.—MEDICAL COLLEGE GRADUATES

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1880.....	2,672	380	188	..	..	3,241
1890.....	3,853	380	221	..	..	4,454
1900.....	4,715	413	86	..	..	5,214
1901.....	4,879	387	148	18	12	5,444
1902.....	4,508	326	138	16	11	5,009
1903.....	5,088	420	149	24	17	5,698
1904.....	5,190	371	146	20	20	5,747
1905.....	5,126	276	153	22	23	5,600
1906.....	4,841	226	186	22	29	5,304
1907.....	4,591	225	121	11	21	4,969
1908.....	4,370	215	116	12	28	4,741
1909.....	4,163	209	84	15	44	4,515
1910.....	4,113	183	114	16	14	4,440
1911.....	4,008	152	110	5	..	4,275
1912.....	4,206	185	92	..	..	4,483
1913.....	3,679	209	93	..	..	3,981
1914.....	3,370	154	70	..	..	3,594
1915.....	3,280	166	85	..	..	3,536
1916.....	3,274	166	78	..	..	3,518

The number of graduates from the nonsectarian colleges was 3,274, or 12 less than last year, 96 less than in 1914, and 405 less than in 1913. It is a decrease of 1,916 (36.9 per cent.) below 1904, when 5,190, the largest number, were graduated from nonsectarian colleges. From the homeopathic colleges there were 166 graduates, or 29 less than in 1915, and 43 less than in 1913. It is a decrease of 254 (60.5 per cent.) below 1903, when 420, the largest number of homeopathic physicians, were graduated. The eclectic colleges graduated 78, or 23 more than last year. It is a decrease of 143 (65 per cent.) below 1890, when 221, the largest number of eclectic physicians, were graduated.

GRADUATES HOLDING DEGREES IN ARTS

Of the 3,518 medical graduates, 948, or 26.9 per cent., were reported to hold also degrees in arts or science. This total includes those taking the combined courses in arts or science and medicine. Last year 24.3 per cent. held these degrees, 22.5 in 1914, and 15.3 per cent. in 1910. Of the 3,274 nonsectarian school graduates, 928, or 28.3 per cent., were reported to have baccalaureate degrees, while of the homeopathic graduates, 20, or 12 per cent., were so reported, and of the eclectic graduates, not one was reported as holding degrees from colleges of liberal arts. As will be noted

TABLE 7.—MEDICAL GRADUATES WITH LIBERAL ARTS DEGREES

Year	Non-sectarian			Homeopathic			Eclectic			Totals		
	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.	Graduates.	A.B., B.S.	Per cent.
1910.....	4,113	684	16.1	183	13	7.1	114	3	2.6	4,440	680	15.3
1911.....	4,006	683	17.0	152	18	11.8	110	4	3.6	4,273	705	16.5
1912.....	4,206	744	17.7	185	15	8.1	92	4	4.3	4,483	763	17.0
1913.....	3,679	732	19.9	209	20	9.6	93	1	1.1	3,981	753	18.9
1914.....	3,370	794	23.5	154	7	4.5	70	6	8.6	3,594	807	22.5
1915.....	3,280	830	25.5	195	16	8.2	55	3	5.5	3,530	856	24.3
1916.....	3,274	928	28.3	166	20	12.0	78	0	0.0	3,518	948	26.9

by referring to Table 14, of the 948 graduates holding baccalaureate degrees, 120 — the largest number — came from the New York colleges. Heretofore the Illinois colleges have furnished the largest number. Illinois comes second with 118, followed by 95 from Maryland, 93 from Pennsylvania, and 80 from Massachusetts. The percentage of graduates holding collegiate degrees is gradually increasing and will continue to increase, particularly in the nonsectarian colleges, because so many of them are now requiring two years of college work for admission, which bring the students nearer to the requirements for the combined course for the B.S. and M.D. degrees.

During the past year there were 566 women studying medicine, or 26 less than last year, 65 less than in 1914, and 563 (49.9 per cent.) less than in 1904, when

TABLE 8.—WOMEN IN MEDICINE

Year.	Total women students.	Percentage of all students, both sexes.	Total women graduates.	Percentage of graduates, both sexes.	Women's colleges.	Students.	Percentage of women students.	Graduates.	Percentage of all women graduates.	Co-ed. schools.	Students.	Percentage of all women students	Graduates.	Percentage of all women graduates.
1904	1,129	4.3	244	4.0	3	183	16.2	56	23.0	97	946	83.8	198	77.0
1905	1,073	4.1	219	4.0	3	221	20.6	54	24.5	96	852	79.4	165	75.5
1906	895	3.5	230	4.2	3	180	21.0	33	14.7	90	706	79.0	200	85.9
1907	928	3.8	211	4.2	3	210	22.6	39	18.5	86	718	77.4	172	81.5
1908	835	3.7	185	3.9	3	186	22.3	46	24.9	88	649	77.7	139	75.1
1909	921	4.2	162	3.7	3	169	18.4	33	20.3	91	752	81.6	129	79.7
1910	967	4.2	157	3.5	3	155	17.1	41	26.1	87	752	82.9	116	73.9
1911	680	3.4	159	3.7	2	134	19.7	36	22.6	74	546	80.3	123	77.4
1912	679	3.2	142	3.2	2	143	21.1	32	22.5	64	536	78.9	110	77.5
1913	640	3.8	154	3.8	2	138	21.6	33	21.4	55	502	78.6	121	78.6
1914	631	3.8	121	3.4	2	125	21.4	25	20.7	54	496	78.6	96	79.3
1915	592	4.0	130	3.7	2	116	19.6	38	29.2	53	462	80.4	92	70.8
1916	566	4.0	134	3.8	2	102	18.0	28	20.0	51	464	82.0	106	80.0

1,129 women students, the largest number, were reported. The percentage of all medical students remains approximately the same as it has been since 1904. There were 134 women graduates this year, 4 more than last year and 13 more than in 1914. Of all

(Continued on page 594)

Marginal Number	NAME OF COLLEGE	1 Alabama....210	2 Arizona....12	3 Arkansas....97	4 California....342	5 Colorado....107	6 Connecticut....308	7 Delaware....24	8 Dist. of Col....91	9 Florida....80	10 Georgia....225	11 Idaho....33	12 Illinois....1,177	13 Indiana....305	14 Iowa....341	15 Kansas....259	16 Kentucky....158	17 Louisiana....172	18 Maine....57	19 Maryland....215	20 Massachusetts....601	Marginal Number
1	University of Alabama School of Medicine, Mobile	51																2				1
2	University of Arkansas Medical Dept., Little Rock	1		39												2	2	4				2
3	College of Medical Evangelists, Loma Linda		12		12					1				2	1							3
4	College of Physicians and Surgeons, Los Angeles				19	5				1			12	2	7	3	2				3	4
5	Oakland College of Medicine and Surgery, Oakland				13																	5
6	College of Physicians and Surgeons, San Francisco		1		28	1	1						2		1		1		1			6
7	Hahnemann Medical College of the Pacific.—H.*				14	1							3		1				1			7
8	Leland Stanford Junior University School of Med.				77	3								1								8
9	Univ. of California Medical School, San Francisco				108									1		1						9
10	Univ. of Colorado School of Med., Boulder-Denver					62							1	2		2						10
11	Yale University School of Medicine, New Haven		1				38							4								11
12	Georgetown University School of Medicine						5		15						1					2		12
13	George Washington University Medical School				2		6		45	1			4	4			1			2		13
14	Howard University School of Medicine	1		2				1	14	3	2		3		1		3			3		14
15	Atlanta Medical College	21								11	140			1			1					15
16	Georgia College of Eclectic Med. and Surg.—E.*										29											16
17	University of Georgia Medical Dept., Augusta									1	47											17
18	Chicago College of Medicine and Surgery, Chicago	2	2		1					4	5		214	19	18	5	7	2	2	1	5	18
19	Chicago Hospital College of Medicine, Chicago												60									19
20	Hahnemann Med. College and Hosp. of Chicago.—H.						1						30	12	9	5			1			20
21	Jenner Medical College, Chicago												96									21
22	Loyola University School of Medicine, Chicago	2		2	4	1	2			1			170	8	2	3	1		2		3	22
23	Northwestern University Medical School, Chicago			1	2	5				1	1	1	98	10	14	12	1					23
24	Rush Medical College (University of Chicago)	1	1	2	8	4					3	1	182	18	34	20	5	1			1	24
25	University of Illinois College of Medicine, Chicago	2				1				1	11	1	107	5	17	6			1			25
26	Indiana University School of Medicine, Indianapolis	1												148								26
27	State Univ. of Iowa College of Med., Iowa City				1	1	1			1		1	5		123	2	1	1				27
28	State Univ. of Iowa Coll. of Homeo. Med.—H.														10							28
29	Univ. of Kansas School of Med., Lawrence-Rosedale															50						29
30	Univ. of Louisville Medical Dept., Louisville	3	1	2	1								13	22	2	1	61	1				30
31	Tulane University of Louisiana School of Medicine	57		12						10	7					2		119				31
32	Bowdoin Medical School, Brunswick-Portland						1								1				42		8	32
33	Johns Hopkins University Medical Dept., Baltimore	9		1	9	2	7	2	3	1	14		8	7	5	1	5	2	1	65	12	33
34	Univ. of Maryland School of Med. & Coll. of P. & S	1	1	1	2		19	1	3	6	2		1	1					2	103	17	34
35	Boston University School of Medicine—H.										1		1						3		39	35
36	College of Physicians and Surgeons, Boston*																				47	36
37	Medical School of Harvard University, Boston				7	9	8	1	2	2	5		7	6	6	2		1	11	2	158	37
38	Tufts College Medical School, Boston	1					18				2		1			1			15		263	38
39	University of Michigan Medical School	1	1			1		2			5	2	12	10	4	5	4			1	2	39
40	University of Michigan Homeo. Med. School.—H.				1								1	3	3	1	1					40
41	Detroit College of Medicine and Surgery, Detroit										1		2	3		1						41
42	University of Minnesota Medical School				2						2		2	1	11				1			42
43	University of Mississippi Dept. of Med., Oxford									1								1				43
44	University of Missouri School of Med., Columbia			1									2			1	1					44
45	Kansas City College of Med. and Surg.—E.																					45
46	National Univ. of Arts & Sci. Med. Dept., St. Louis	1		2						1	1		36		2	5	2					46
47	Southwest Coll. of Med. and Hosp., Kansas City.—H															3						47
48	St. Louis University School of Medicine	1		1	1	1					1		42	6	19	14		1			1	48
49	Washington University Medical School, St. Louis			3									12			10						49
50	Lincoln Medical College, Lincoln.—E.															1						50
51	John A. Creighton Medical College, Omaha		1		1								1		21	6						51
52	University of Nebraska College of Medicine, Omaha			1	1	1									14	2						52
53	Dartmouth Medical School, Hanover					1							1						1		9	53
54	Albany Medical College, Albany					1															2	54
55	University of Buffalo Dept. of Medicine, Buffalo				2										1						1	55
56	Columbia University College of Phys. and Surgs.	1				3	18				10	2	2	2	1	1	2			1	3	56
57	Cornell University Medical College, New York City						9		1												5	57
58	Fordham Univ. School of Medicine, New York City						17													9		58
59	Long Island College Hospital, Brooklyn						2														2	59
60	New York Homeo. Med. Coll. and Flower Hosp.—H.				1		5												1			60
61	New York Med. Coll. and Hosp. for Women.—H.																					61
62	Univ. and Bellevue Hosp. Med. Coll., N. Y. City				1		12				1				1	1					1	62
63	Syracuse University College of Medicine, Syracuse																				1	63
64	Univ. of N. Carolina School of Med., Chapel Hill									1												64
65	North Carolina Medical College, Charlotte									1												65
66	Leonard Medical School, Raleigh																					66
67	Wake Forest College School of Med., Wake Forest																					67
68	University of North Dakota School of Medicine																				1	68
69	Eclectic Medical College, Cincinnati—E.				2								5	2	1	1	9					69
70	University of Cincinnati College of Medicine				1									4			7					70
71	Western Reserve University School of Medicine					1				1		2	2	1	1		1					71
72	Ohio State University College of Medicine, Columbus																2					72
73	Ohio State Univ. Coll. Homeo. Med., Columbus—H.																					73
74	Univ. of Okla. Sch. of Med., Norman-Oklahoma City	3												1								74
75	University of Oregon Dept. of Medicine, Portland											1				3						75
76	Hahnemann Med. Coll. and Hosp., Philadelphia.—H						1	2	2												1	76
77	Jefferson Medical College of Philadelphia	4	1	1	6		14	7		3	3	3	5			2	1	1	4	4	7	77
78	Medico-Chirurgical College of Philadelphia				1		4	4	1		1			2		1		1	2	2	7	78
79	Temple University Dept. of Medicine, Philadelphia						1	1														79
80	University of Pennsylvania School of Medicine	2			4	1	1	4			2	1	6	2	2	1	1	1		5	3	80
81	Woman's Medical College of Pennsylvania			1			1								2					1	3	81
82	Univ. of Pittsburgh School of Med., Pittsburgh																					82
83	Medical College of the State of South Carolina	1								3	2											83
84	University of South Dakota College of Medicine																					84
85	Lincoln Memorial Univ. Med. Dept., Knoxville									1							4					85
86	University of Tennessee Coll. of Med., Memphis	8		9		1				1			1				2	7				86
87	Univ. of West Tenn. Coll. of Med. & Surg., Memphis	3									3							2				87
88	Meharry Medical College, Nashville	25		8					2	13	27		7			1	12	12		1	1	88
89	Vanderbilt University Medical Dept., Nashville	23		6	1	2				13	6		8		1	11	8					89
90	Baylor University College of Medicine, Dallas										1		1		1							90
91	Fort Worth School of Medicine, Fort Worth					1											1	2				91
92	University of Texas Dept. of Medicine, Galveston	1	1	2						1	1	1		1				2	1			92
93	Univ. of Utah School of Medicine, Salt Lake City																					93
94	Univ. of Vermont College of Medicine, Burlington						7												6		7	94
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

Marginal Number	21 Michigan.....416	22 Minnesota.....245	23 Mississippi.....184	24 Missouri.....330	25 Montana.....37	26 Nebraska.....251	27 Nevada.....3	28 New Hampshire..46	29 New Jersey.....359	30 New Mexico.....11	31 New York.....2,689	32 North Carolina 420	33 North Dakota...34	34 Ohio.....683	35 Oklahoma.....130	36 Oregon.....52	37 Pennsylvania.1,069	38 Rhode Island...64	39 South Carolina 161	40 South Dakota...51	41 Tennessee.....238	42 Texas.....89	43 Utah.....30	44 Vermont.....30	45 Virginia.....324	46 Washington.....110	47 West Virginia...141	48 Wisconsin.....333	49 Wyoming.....6	50 Philippine Is'ds etc..85	51 Foreign.....89	52 Totals.....14,622	Marginal Number
1			3								4																				56	1
2			2								5			1			1					2										56	2
3	2	1		1		3			1	2		1		1							1	4			5		1	1		10	51	3
4	5	4		4	1	10					5		1	7	1		7			2		2	3	1			5		1	20	143	4
5																															13	5
6	1			1							4			2		2															63	6
7	3			2							2			2			2												1	11	43	7
8		2		1							1																			3	86	8
9						1	2								1							2	1	1							3	124	9
10	1	1		1					1		7			2							1				1			1		1	79	10
11	1			1						1	7			1											1						58	11
12		1							1		14	1		2	1	1					1	1		1	11	1	3	3		2	141	12
13			6	2							1	11		1			6	2	7		2	1			10		1			9	100	13
14											1	12							10		4	4			4					6	222	14
15																															29	15
16																			3												54	16
17	24	19	3	4	2	3			4		16	2	3	22	2		14				3	1		2	1	1	14	25		14	16	488	17
18																															60	18
19	3	3											1	7			1					1						5			5	85	19
20																															18	20
21	9	6	3	5		3					9			4	2		7		1	1		4	1	3	1	4	13		17	12	308	21
22	7	15	2	4	2	3				1	1		6	6	2	2	2		5	1	1	2	2		7	9	22			3	236	22
23	12	17		13	7	18				1	4		7	16	3	2	5		1	10	5	9	20		1	9	41		3	5	488	23
24	7	13		6					1		2			5	3		2			5			1			4	15		2	11	127	24
25		1		2			1														1									1	156	25
26											1									1						1				7	151	26
27																															10	27
28				4											1																105	28
29				2								2		2			6	1		2	3				2	2	9		1	2	140	29
30		1	19	2	5				1		2	4		1	1		1		3	1	36				2	1		1			265	30
31								3			2																			13	60	31
32	5	3	1	8	1	2			12		23	9	5	24	1	1	35	2	1		5	4			29	4	5	3		2	4	353	32
33				1				2	14		29	26		5	1		1	1	11			3		13		25			19	16	368	33
34				1				1			4	1		1			3	1	1				2	1	1						13	75	34
35																															47	35
36	2	4		6				5	4	1	25	8		12	2		10	14	3			5	4	3		2	1	3		2	10	334	36
37	158			3		2		16		2	15			2			5	28		1	2		1	1		10	1	5		6	14	326	37
38	15	4						1			24	1		26	1	1	16															324	38
39	138	2						2			6			3			2	1														44	39
40		205		2	2	1					3		8	9			1			2	1	1				8	1	3			18	180	40
41			50																			1									1	223	41
42				66		1																1				1					2	55	42
43				108																												74	43
44			1	86		1					1				5						1	1				2				1	108	44
45				13											1															1	149	45
46	9	7		80		1		10			1	2		17	3	2			1	1	1	3	1			8		5			3	231	46
47				46		2					1								1	1					1		9			3	92	47
48			1																												25	48
49		5		5	3	23					1			1					2			1				4		1	1		128	49
50		2		2		66								1		1			1										2		123	50
51						1		10	4		3												1								33	51
52									3		110			1									1								148	52
53											172			5																181	53
54	4	1		3		1		1	38	1	284	4		2	2	2	4				1	5	4	1	4	2	1	1		4	419	54
55						2			9		109	1		1			6	2	1			4	1	1	2		1			1	151	55
56									15		207						5										1			1	256	56
57				5					12		246	1							1											1	272	57
58	1								30		131						3				1		1								177	58
59									11		36																				47	59
60	1			1	1	1			71	1	255	5		3	1						1	1	1	1		1				2	265	60
61				1					1		104						4														3	115	61
62												68							4						3							77	62
63											1	27							2											1		30	63
64												2							1													5	64
65		1										29							1						5							34	65
66											3	21		58	1		2		1		1					1	8				23	66
67	1			1		6					3		1	66			4		1		1	1				1	2				101	67
68											1			138			10			1	2	1	6				5			3	178	68
69		1									2			176			4										3	1			185	69
70														34			2														39	70
71				1											65															1	75	71
72											1			1		64					1										81	72
73				1	2	4			11		1			1			68				1					14					98	73
74		5	4	4		4			40		23	38		12	4	1	205	4	9		1	2	5	1	1	1	7	3		3	526	74
75		2							27		13	2	1	2	1		212				1	1			2	1	2	1		2	12	306	75
76									2		5			1			28				1	1			1						5	46	76
77	1	1	1	2	1	1		1	18		11	23		1		1	171		2		4	2			5	12	1	8		4	10	317	77
78	1								3		3						23					1									4	53	78
79												2		3			165															111	79
80																	1		53												12	80
81												4								11	11											21	81
82				41	1							3		1	5						64	14			1							150	82
83				2							2	5			2				1		4				2		1				27	83
84			24	8	9				1		3	19		1	4		1		22		37	36			9	1		3		18	201	84
85	1	1	8		6					1	1	1		1	2				4		73	26			1	1				1	212	85
86											1				1							52										50	86
87															2							45										50	87
88			1							1		1			1		1				1	109									215	88
89																							23								23	89
90								2	2		11			1			1	2					37								78	90
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

Marginal Number	NAME OF COLLEGE	1 Alabama 219	2 Arizona 17	3 Arkansas 97	4 California 342	5 Colorado 107	6 Connecticut 108	7 Delaware 34	8 Dist. of Col. 91	9 Florida 83	10 Georgia 325	11 Idaho 23	12 Illinois 1,177	13 Indiana 305	14 Iowa 341	15 Kansas 226	16 Kentucky 158	17 Louisiana 172	18 Maine 97	19 Maryland 215	20 Massachusetts 601	Marginal Number
95	Medical College of Virginia, Richmond	..	..	..	..	..	12 2	..	..	1	2	..	..	..	..	..	..	..	..	4	..	95
96	Univ. of Virginia Dept. of Medicine, Charlottesville	2	..	..	..	..	..	1	3	..	2	..	..	1	..	..	2	1	..	4	..	96
97	West Virginia Univ. School of Med., Morgantown	..	..	..	..	..	..	..	..	..	..	..	5	1	..	..	..	..	..	2	..	97
98	University of Wisconsin Medical School, Madison	..	..	..	..	..	..	..	..	..	..	..	1	..	1	..	..	..	..	..	..	98
99	Marquette University School of Medicine, Milwaukee	..	..	..	..	1	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	99
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	

H.—Homeopathic; E.—Eclectic. * Exact distribution not given. † Distribution based on that of 1914-15.

(Continued from page 591)

the women matriculants, 102 (18 per cent.) were in attendance at the two medical colleges for women, while the remaining 464 (82 per cent.) were matriculated in the 51 coeducational colleges. From the two women's colleges there were 28 graduates, while 106 secured their degrees from coeducational colleges.

Since June 30, 1915, two new colleges were organized and two colleges (mentioned on page 599) were suspended or merged with others. The Hahnemann Medical College of the Pacific, which was omitted last year because of its merger with the University of California, is to continue as a teaching institution until 1918, when its last class will have graduated. There are now 95 medical colleges still existing. The number of colleges is the smallest since 1880, at which time began the rapid movement toward creating medical colleges, many of which were conducted for profit. The rapid increase in the number of colleges between 1880 and 1904 has been paralleled only by the rapid decrease since 1904. Ninety-four colleges have been closed by merger or otherwise since 1904, but in the same time twenty-seven new colleges were organized, leaving 95 medical colleges which still exist. The net reduction since 1906 has been 67 colleges, or 41.4 per cent.

TABLE 9.—Medical Colleges

Year.	Non-sectarian.	Homeopathic.	Eclectic.	Physio-Med.	Nondescript.	Total.
1850	14	3	4	1	..	22
1860	53	6	4	2	..	65
1870	60	8	5	2	..	75
1880	76	14	8	2	..	100
1890	106	16	9	2	..	133
1900	126	22	9	2	1	160
1901	125	22	10	2	1	160
1902	126	20	9	3	2	160
1903	126	20	9	3	2	160
1904	127	19	9	3	2	160
1905	125	19	9	3	2	158
1906	130	19	8	3	2	162
1907	127	18	9	3	2	159
1908	120	18	9	2	2	151
1909	115	15	8	1	1	140
1910	109	12	8	1	1	131
1911	103	12	7	..	..	122
1912	101	11	6	..	..	118
1913	92	10	5	..	..	107
1914	87	10	5	..	..	102
1915	83	9	4	..	..	96
1916	82	10	3	..	..	95

FEWER BUT BETTER COLLEGES

Of the 94 medical colleges which have ceased to exist since 1904, 53 were closed by merger and 41 became extinct; 49 were rated by the Council on Medical Education in Classes A and B, and 45 in Class C. Note also that 44, or 95.5 per cent., of the closures of the medical colleges in Classes A and B were through merger with other colleges, while of the 45 Class C colleges which closed, only 9 (20 per cent.) were through merger with other colleges. In other words, all but five of the colleges which became extinct had been rated in Class C by the Council on Medical Education.

TABLE 10.—Colleges Closed Since 1904

Year	Class A*		Class B		Class C		Totals		Total Closed
	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	Mgd.	Ext.	
1905	8	1	..	..	..	..	8	1	9
1906	..	..	..	..	..	..	..	..	..
1907	3	..	3	1	..	3	6	4	10
1908	2	..	2	..	1	4	5	4	9
1909	3	..	1	..	..	7	5	7	12
1910	1	..	3	..	3	6	7	6	13
1911	..	..	3	..	1	3	4	3	7
1912	2	..	..	..	..	3	2	3	5
1913	3	..	6	1	1	3	10	4	14
1914	..	..	..	..	2	3	2	3	5
1915	1	..	1	2	1	3	3	5	8
1916	1	..	..	..	..	1	1	1	2
Totals	24	7	20	4	9	36	53	41	94

* Based on the classifications of medical colleges prepared by the Council on Medical Education.

While the total number of colleges is growing smaller, the number of high-grade, stronger medical colleges is constantly increasing. In 1904, only 4, or 2.5 per cent. of all medical colleges, were requiring any preliminary education in advance of the usual high school education, now 84[2] (88.4 per cent.) are requiring one or more years of advance college work. Of these 84 colleges there are 46 which are requiring two years or more of collegiate work for admission and 15 others have adopted the higher requirement to go into effect in the next one or two years. In 1904 very little was known about the practice of colleges in the administration of entrance standards, as at that time no systematic check was kept on the methods used; now, through the Students' Register which, with the splendid cooperation of medical school officers, was started in 1910, the standards actually enforced by each college are known, faulty methods or "paper standards" are discovered and corrected or exposed, and instead of being

2. See list on page 605.

Marginal Number	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	Marginal Number
	Michigan....496	Minnesota....345	Mississippi....184	Missouri....510	Montana....75	Nebraska....351	Nevada....3	New Hampshire..46	New Jersey....320	New Mexico....11	New York....2,035	North Carolina 430	North Dakota....34	Ohio....663	Oklahoma....130	Oregon....92	Pennsylvania..1,060	Rhode Island....64	South Carolina 101	South Dakota....31	Tennessee....238	Texas....480	Utah....86	Vermont....50	Virginia....334	Washington....110	West Virginia...141	Wisconsin....333	Wyoming....6	Philippines, etc..36	Foreign....460	Totals....14,032	
95	....	....	1	....	....	....	....	....	1	....	5	62	....	4	....	....	2	....	6	....	1	....	....	....	153	....	14	....	....	....	8	206	95
96	....	....	3	....	....	....	....	....	....	....	3	9	....	....	1	....	2	....	7	....	3	2	....	....	60	....	4	1	....	....	1	114	96
97	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	17	....	....	....	....	17	97
98	1	1	....	1	1	2	....	....	....	....	1	....	....	....	....	....	....	....	....	2	2	....	....	....	....	1	1	79	....	....	1	101	98
99	....	9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	1	....	....	....	....	1	....	....	....	....	....	72	....	1	....	87	99
	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	

an unknown quantity, preliminary requirements are now known with fair accuracy.

FURTHER MERGERS NEEDED

During the year a noteworthy event was the merging of the Medico-Chirurgical College of Philadelphia with the University of Pennsylvania School of Medicine as its Graduate School of Medicine. This is an important step toward the desired end of having the abundance of clinical material of Philadelphia organized under a centralized control whereby it may be best utilized.

There are still sixteen cities each of which has two or more medical schools, and in two of these mergers are scarcely possible, owing to the fact that the schools are for different races, leaving fourteen cities where mergers are still possible. These cities and the number of colleges in each are as follows: Chicago, 8; New York, 7; Philadelphia, 5; Boston, 4; San Francisco, 3; St. Louis, 3; Washington, 3, and there are 2 colleges each in Ann Arbor, Baltimore, Cincinnati, Columbus, Iowa City, Los Angeles and Omaha. In 1904 there were 24 cities having each from 2 to 14 medical

TABLE 11.—CITIES HAVING TWO OR MORE MEDICAL COLLEGES

City	A	B	C	Total
Chicago	3	3	2	8
New York	5	1	1	7
Philadelphia	4	1	..	5
Boston	3	..	1	4
San Francisco	2	..	1	3
St. Louis	2	..	1	3
Washington	3*	..	..	3
Ann Arbor	2	..	..	2
Baltimore	2	..	..	2
Cincinnati	1	1	..	2
Columbus	1	..	1	2
Iowa City	2	..	..	2
Los Angeles	..	1	1	2
Memphis	1	..	1*	2
Nashville	1	1*	..	2
Omaha	1	1	..	2

* One school for the colored race.

schools. The highest development of medical education in these cities is prevented by the existence of too many competing medical schools. For the further improvement not only of undergraduate, but also of graduate medical instruction in this country, there should be other mergers in the fourteen cities which have been named.

LENGTH OF TERMS

The length of terms of each college fluctuates somewhat from year to year, but on the whole, during the last thirteen years there has been a decided lengthening of college terms. This has reference to the weeks of

TABLE 12.—COLLEGE TERMS

Year	23 to 26 weeks		27 to 28 weeks		29 to 30 weeks		31 to 32 weeks		33 to 34 weeks		35 to 36 weeks		Over 36 weeks	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
1901	58	36.5	42	26.4	8	5.0	26	16.4	4	2.5	18	11.3	3	1.9
1902	44	28.4	44	28.4	11	7.1	33	21.3	3	1.9	18	11.6	2	1.3
1903	33	21.4	46	29.9	15	9.7	37	24.0	2	1.3	19	12.4	2	1.3
1904	27	16.3	44	26.5	22	13.5	37	22.3	12	7.8	20	12.0	3	1.8
1905	15	9.4	35	21.8	12	7.5	44	27.5	13	8.1	28	23.8	3	1.9
1906	14	8.7	35	21.7	26	16.1	32	19.9	24	14.9	28	17.4	2	1.3
1907	6	3.7	27	16.8	26	16.1	42	26.1	29	18.0	29	18.0	2	1.3
1908	2	1.3	21	13.8	28	18.4	51	33.6	24	15.8	22	14.5	4	2.6
1909	4	2.3	17	11.6	23	16.4	51	34.9	18	12.3	30	20.5	3	2.6
1910	2	1.5	8	6.0	19	14.3	42	31.5	30	22.6	30	22.6	2	1.5
1911	..	....	6	5.0	16	13.3	37	30.8	32	26.7	28	23.4	1	0.8
1912	1	0.9	1	0.9	11	9.5	34	29.3	37	31.8	31	26.7	1	0.9
1913	..	....	3	2.8	5	4.7	29	27.4	41	38.7	27	25.5	1	0.9
1914	..	....	2	2.0	4	4.0	25	24.8	41	40.5	28	27.7	1	1.0
1915	..	....	1	1.0	5	5.3	22	23.2	36	37.9	30	31.6	1	1.0
1916*	..	....	..	....	4	4.2	17	17.9	43	45.3	28	29.5	..	....

* Information not obtained from three Class C colleges.

actual work exclusive of holidays. No colleges this year reported sessions shorter than 29 weeks and only 4 reported sessions of 29 and 30 weeks, two of these being colleges for colored students. Sessions of from 33 to 36 weeks were reported by 71, or 74.7 per cent. of all colleges. It should be noted that the great progress has been since the agitation for longer terms and standards in medical education was begun by the Council on Medical Education in 1904.

TUITION AND OTHER FEES

Attention is called in Table 1, on page 588, to the amounts charged by the various medical colleges per annum for tuition, matriculation, laboratory and graduation fees for each student. In Table 13, 93 of the 95 remaining colleges—from two the figures were not obtained—have been grouped according to the amount of fees charged and according to their classification by the Council on Medical Education in Classes A, B and C. Nineteen colleges charge fees of $100 or less per year; fifty-three between $100 and $175, and twenty-one charge above $175. Of the nineteen colleges charging $100 or less, thirteen, or more than

(Continue on page 598)

Name of College	Enrolled During 1915-16				
	1st Yr.	2d Yr.	3d Yr.	4th Yr.	Total
University of Alabama School of Medicine	6	9	23	18	56
Univ. of Arkansas Medical Dept., Little Rock	7	17	13	19	56
College of Medical Evangelists, Loma Linda	4	26	9	12	51
College of Phys. and Surgs., Los Angeles	47	23	49	24	143
Oakland College of Med. and Surg., Oakland	4	2	5	2	13
College of Phys. and Surgs., San Francisco	10	30	10	13	63
Hahnemann Med. Coll. of the Pacific.—H	.....	7	20	16	43
Leland Stanford Junior Univ. School of Med.	20	23	26	27	96
University of California Medical School	28	28	29	29	124
University of Colorado School of Medicine	21	13	22	13	79
Yale University School of Med., New Haven	25	16	11	6	58
Georgetown University School of Medicine	10	19	11	13	53
George Washington University Medical School	24	20	48	41	141
Howard University School of Medicine	27	33	18	22	100
Atlanta Medical College, Atlanta	34	32	58	108	232
Georgia Coll. of Eclectic Med. and Surg.—E	.....	.....	.....	29	29
University of Georgia Medical Department	20	11	13	10	54
Chicago College of Medicine and Surgery	45	80	142	221	488
Chicago Hospital College of Medicine*	.....	.....	.....	.....	60
Hahnemann Medical College and Hospital, Chicago.—H	18	16	33	18	85
Jenner Medical College, Chicago	2	52	71	53	178
Loyola University School of Med., Chicago	22	47	86	153	308
Northwestern University Med. School, Chicago	87	59	51	39	236
Rush Medical School, Chicago	125	125	130	108	488
University of Illinois, College of Medicine	47	22	48	110	227
Indiana University School of Medicine	47	37	39	33	156
State Univ. of Iowa Coll. of Med., Iowa City	59	43	20	29	151
State Univ. of Iowa Coll. of Homeo. Med., Iowa City.—H	4	4	2	.....	10
University of Kansas School of Medicine	48	25	20	12	105
University of Louisville Medical Department	14	10	70	55	149
Tulane University of Louisiana School of Med.	80	51	59	75	265
Bowdoin Medical School, Brunswick-Portland	18	21	11	10	60
Johns Hopkins University Medical Dept.	90	80	80	85	353
University of Maryland School of Medicine and College of Physicians and Surgeons	53	55	105	155	368
Boston University School of Medicine.—H	16	11	28	20	75
College of Physicians and Surgeons, Boston	14	8	3	22	47
Medical School of Harvard University	104	95	68	67	334
Tufts College Medical School, Boston	128	75	98	79	380
Univ. of Michigan Medical School, Ann Arbor	108	83	60	64	314
Univ. of Michigan Homeo. Medical School.—H	11	13	10	10	44
Detroit College of Medicine and Surgery	36	39	65	50	190
University of Minnesota Medical School	89	76	52	36	253
University of Mississippi Dept. of Medicine	32	23	.....	.....	55
University of Missouri School of Medicine	42	32	.....	.....	74
Kansas City College of Med. and Surg.—E	30	40	30	18	108
Southwest School of Medicine and Hospital, Kansas City.—H	7	1	4	8	20
National Univ. of Arts and Sciences Med. Dept.	18	38	36	57	149
St. Louis University School of Medicine	80	49	49	44	221
Washington University Med. School, St. Louis	27	12	36	17	92
Lincoln Medical College, Lincoln.—E	10	3	3	9	25
John A. Creighton Medical College	24	17	45	42	128
University of Nebraska College of Medicine	48	35	19	21	123
Dartmouth Medical School, Hanover	25	8	.....	.....	33
Albany Medical College, Albany	27	24	44	53	148
University of Buffalo Dept. of Med., Buffalo	48	29	66	38	181
Columbia University Coll. of Phys. and Surgs.	135	106	97	71	419
Cornell Univ. Medical College, New York City	56	33	31	31	151
Fordham University School of Medicine	90	74	50	42	256
Long Island College Hospital, Brooklyn	57	45	82	88	272
New York Homeopathic Medical College and Flower Hospital.—H	14	43	55	65	177
New York Med. Coll. & Hosp. for Women.—H	17	6	11	13	47
Univ. and Bellevue Hosp. Med. Coll., N. Y. City	108	111	68	48	335
Syracuse University College of Medicine	23	20	29	24	115
University of North Carolina School of Med.	36	41	.....	.....	77
North Carolina Medical College, Charlotte	.....	3	18	9	30
Leonard Medical School, Raleigh	3	2	.....	.....	5
Wake Forest College School of Medicine	30	14	.....	.....	44
University of North Dakota School of Medicine	13	10	.....	.....	23
Eclectic Medical College, Cincinnati.—E	23	23	27	28	101
University of Cincinnati College of Medicine	23	23	20	22	88
Western Reserve University School of Medicine	52	42	32	52	178
Ohio State University College of Medicine	61	67	76	60	185
Ohio State University Coll. of Homeo. Med.—H	11	13	8	7	39
University of Oklahoma School of Medicine	17	14	24	20	75
University of Oregon Dept. of Med., Portland	27	25	12	17	81
Hahnemann Med. Coll. and Hosp. of Phila.—H	23	13	24	20	80
Jefferson Medical College of Philadelphia	135	80	146	177	538
Medico-Chirurgical College of Philadelphia	69	44	103	90	306
Temple University Dept. of Med., Philadelphia	9	1	22	14	46
University of Pennsylvania School of Medicine	103	62	75	74	317
Women's Medical College of Pennsylvania	10	8	20	17	55
University of Pittsburgh School of Medicine	54	19	16	22	111
Medical College of the State of South Carolina	11	13	20	17	61
University of South Dakota College of Med.	5	7	.....	.....	12
Lincoln Memorial University Medical Dept.	.....	2	5	14	21
University of Tennessee College of Medicine	16	15	65	63	159
Univ. of West Tenn. College of Med. and Surg.	6	4	3	14	27
Meharry Medical College, Nashville	33	26	105	87	301
Vanderbilt University Medical Dept., Nashville	13	26	76	87	202
Baylor University College of Medicine, Dallas	5	17	9	28	59
Fort Worth School of Medicine	16	8	19	7	50
University of Texas Department of Medicine	75	48	57	35	215
University of Utah School of Medicine	13	10	.....	.....	23
University of Vermont College of Medicine	21	24	17	14	76
Medical College of Virginia, Richmond	25	55	87	99	266
University of Virginia Department of Medicine	39	30	23	22	114
West Virginia University School of Medicine	8	9	.....	.....	17
University of Wisconsin Medical School	42	58	.....	.....	101
Marquette University School of Medicine	13	17	11	46	87
Totals for 1916	3782	3004	3539	3727	14052
Totals for 1915	3373	3019	3675	3864	14891
Totals for 1914	4684	3281	3807	3055	16502

H.—Homeopathic; E.—Eclectic.

* Figures for 1914-15; distribution by classes not given.

This table shows for all colleges, except one, the number of students enroled in each of the four classes. Eleven colleges teach only the first two years of the medical course. Hahnemann Medical College of the Pacific, Lincoln Memorial University and the North Carolina Medical College had students only in the last three classes. The Georgia College of Eclectic Medicine and Surgery had only seniors and graduated its last class.

The largest first year classes are found at the University and Bellevue Hospital Medical College, 168; Columbia University College of Physicians and Surgeons and Jefferson Medical College, each 135; Tufts College Medical School, 128; Rush Medical College, 125; the University of Michigan Medical School, 108; Harvard University Medical School, 104, and University of Pennsylvania School of Medicine, 101. The smaller enrolments in the first and second year classes of the Atlanta Medical College, Loyola University School of Medicine and the Chicago College of Medicine and Surgery mark the beginning of a more rigid administration of their requirements for admission.

The totals for the previous session are also given, to permit of comparison. The marked reduction in the number of first year students is due to the general adoption of higher entrance standards. Sixty students (of the Chicago Hospital College of Medicine) have been figured in the total (14,052) which are not shown by classes.

The six colleges having the largest enrolments are Jefferson Medical College, 538; Rush Medical College and Chicago College of Medicine and Surgery, each 488; Columbia University College of Physicians and Surgeons, 419, and the University and Bellevue Hospital Medical College, 395.

There were 3,582 freshmen enroled this year, an increase of 209 over last year. This is evidence that after a few years have been allowed for readjustments under the higher entrance standards, the enrolments of students will again increase.

TABLE 4.—ENROLMENTS IN MEDICAL COLLEGES FOR TWELVE YEARS

Name of College	Total Enrolment of Students in Session Ending in											
	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
University of Alabama School of Medicine	170	158	170	169	191	179	154	137	115	94	93[1]	56[2]
University of Arkansas Med. Dept.	220	176	182	177	179	171	104	145	110	95	77	56[2]
College of Medical Evangelists	.....	.....	.....	.....	.....	10	29	56	62	75	62[1]	51[2]
College of Physicians and Surgeons, Los Angeles	25	32	34	37	32	69	108	136	125	153	132[1]	143
College of Physicians and Surgeons, San Francisco	144	145	79	70	40	29	23	16	19	34	62[1]	63
Hahnemann Medical College of the Pacific	34	24	28	33	23	34	34	35	38	40	45	43[2]
Oakland College of Medicine and Surgery	12	10	10	10	17	20	21	22	13	15	12	13[2]
Leland Stanford Junior University School of Med.	.....	.....	.....	.....	.....	15	16	70	53[3]	75	95	96
University of California Medical School	104	102[3]	54	36	36	107	92	88	111	124	133	124
University of Colorado School of Medicine	54	70	58	52	54	77	152	118[3]	10	54	59	79
Yale University School of Medicine	138	134	153	136	141	124	83[3]	63	42	49	49	58
Georgetown University School of Medicine	133	102	82	82	80	117	131	155	126	99[3]	81	53
George Washington Univ. Med. School	256	230	215	198	156	109	98	92	103	171	145[3]	141
Howard University School of Medicine	153	157	186	205	205	210	193[3]	170	122	110	102[3]	100
Atlanta Medical College	250	180	200	224	280	324	350	372	338	488[4]	341	232[2]

TABLE 4.—ENROLMENTS IN MEDICAL COLLEGES FOR TWELVE YEARS—(Concluded)

Name of College	Total Enrolment of Students in Session Ending in											
	1905	1906	1907	1908	1909	1910	1911	1912	1913	1914	1915	1916
Georgia College of Eclectic Medicine and Surgery	53	57	76	71	66	60	81	70	70	51	21	29
University of Georgia Medical Department	108	113	98	113	99	113	136	126	80	58	54[1]	54
Chicago College of Medicine and Surgery	292	189	239	325	286	380	630	556	642	638	329	484[1]
Chicago Hospital College of Medicine	.....	.....	.....	.....	.....	.....	.....	.....	.....	75	60	60
Hahnemann Medical College of Chicago	220	178	136	117	130	131	107	104	76	92	86[1]	85
Jenner Medical College	102	220	185	175	112	105	117	138	191	109	175	98
Loyola University School of Med	103	166	153	150	186	231	283	402	295	406	302	308[1]
Northwestern University Medical School	363	390	473	553	527	637	597[2]	559	196[3]	180	194	136
Rush Medical College[4]	522	450	567	586	488	468	476	559	422	462	487	488
University of Illinois College of Medicine	654	556	501	463	517	556	508	506	535	422[1]	289[2]	227
Indiana University School of Medicine	14	21	109	308	206	248[1]	188[2]	155	146	133	152	156
State University of Iowa College of Medicine	277	267	272	266	266	190[1]	118[2]	110	98	108	143	151
State University of Iowa College of Homeopathic Medicine	41	47	44	43	42	35	18	16[2]	13	5	11	10
University of Kansas School of Medicine	22	102	115	101	50	89[2]	85	75	66	105	101	105
University of Louisville Medical Department	248	213	456	331	706	624	447	353	255	278	208[1]	149
Tulane University of Louisiana School of Medicine	466	458	516	539	439	417	373[2]	321	296	327	286	245
Bowdoin Medical School	93	87	94	93	81	74	67	85	75[1]	67	75	69
Johns Hopkins University Medical Department[5]	291	253	264	281	297	334	347	357	351	360	361	353
University of Maryland School of Medicine	340	339	311	316	229	309	324	319	293	454	347[1]	318
Boston University School of Medicine	83	109	98	102	95	79	86	94	98	113	80[1]	75
College of Physicians and Surgeons, Boston	108	134	123	102	172	89	108	89	80	110	55	47
Harvard University Medical School[6]	307	292	306	258	285	279	264	258	285	305	319	324
Tufts College Medical School	385	375	376	371	384	378	379	329	317	311	305	280
Detroit College of Medicine and Surgery	208	173	158	146	161	132	165	172	197	249	197[1]	180
University of Michigan Medical School	376	309	371	390	404	315[2]	260	242	221	282	307	324
University of Michigan Homeopathic Medical School	66	82	82	82	81	74	92	91	62[1]	73	68	44
University of Minnesota Medical School	228	180	188	166[7]	245	160	172	183	176	169	208	252
University of Mississippi Department of Med	18	22	18	28	27	50	50	44	38	35	45[1]	55
Eclectic Medical University	58	46	36	41	54	21	49	50	42	65	65	108[12]
National University of Arts and Sciences Med. Dept	66	63	38	41	38	39	46	172	111	146	127	149
Southwest College of Medicine and Hospital	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	20
St. Louis University School of Medicine	385	295	308	241	243	261	274[1]	271	233	204	188	221
University of Missouri School of Med	109	98[1]	66	67	79	34[2]	36	43	55	65	75	74
Washington University Medical School	254	238	215	258	191	205	153[2]	109	69[2]	61	75	92
John A. Creighton Medical College	167	172	167	158	177	194	188	194	182	182	148[1]	128
Lincoln Medical College	81	71	50	50	42	58	42	26	35	29	29	25
University of Nebraska College of Medicine	92	142	82	98	122	76[2]	72	70	78	84	98	123
Dartmouth Medical School[7]	60	59	62	58	58	57	42[2]	36	27	22	23	33
Albany Medical College	172	165	195	180	180	196	208	223	229	258	173[1]	148
Columbia University College of Physicians and Surgeons	568	450	387	322	312	360	328[2]	347	339	308	381	419
Cornell University Medical College	352	309	342	316	217[2]	164	116	85	102	108	134	151
Fordham University School of Medicine	.....	.....	24[1]	30	43	75	94	118	136	175	206	256
Long Island College Hospital	414	243	342	337	364	368	407	412	438	360	285[1]	272
New York Homeopathic Medical College	110	110	109	80	109	125	210	170	245	237	242	177[1]
New York Medical College and Hosp. for Women	34	30	24	36	24	24	24	31	45	42	38	47
Syracuse University College of Medicine	154	153	153	150	149	140[1]	109[2]	91	87	96	100	115
University and Bellevue Hospital Medical College	391	481	507	503	445	474	510	476	352[1]	333	304	295
University of Buffalo Department of Medicine	231	222	224	176	185	191	223	228	221	236	191[1]	181
Leonard Medical School[7]	126	147	149	146	125	133	130	121	97	76	11[2]	5
North Carolina Medical College	81	92	69	82	94	107	112	100	85	91[1]	32	30
Wake Forest College School of Medicine	18	30	39	40	52	37[2]	38	29	33	28	36	34
University of North Carolina School of Medicine	100	96	114	114	113	74	51[1]	54	54	60	80	77
University of North Dakota School of Medicine	.....	7	15	30[2]	22	36	39	13	14	14	17	23
Eclectic Medical College	135	116	97	91	81	91	95	89	89	87	114	101
Ohio State University College of Medicine[13]	.....	.....	.....	309	231	229	252	256	221	284	231	185[2]
Ohio State University College of Homeopathic Medicine	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	46[1]	39
University of Cincinnati College of Medicine[14]	121	137	133	117	130	191	140[1]	113	80	60[2]	80	88
Western Reserve University School of Medicine[8]	73	85	87	104	98	94	107	176	161	157	169	178
University of Oklahoma School of Medicine	8	16	13	8	10	21	63	31	32	94	93[1]	75
University of Oregon Department of Medicine	102	82	83	68	74	80	72[2]	67	57	79	32	31
Hahnemann Medical College of Philadelphia	164	186	188	168	187	159	135	116	92	93	85[1]	98
Jefferson Medical College	676	617	629	603	501	531	559	616	680	648	556[1]	538
Medico-Chirurgical College of Philadelphia	461	467	434	419	461	455	402	341	314	350	297[1]	306
Temple University Department of Medicine	87	101	90	104	134	197	82	81	60	101	63[1]	46
University of Pennsylvania School of Medicine	546	577	588	604	544	529[2]	445[2]	367	307	266	276	317
University of Pittsburgh School of Medicine	281	307	346	362	378	309	240	174[2]	145	124[2]	103	111
Woman's Medical College of Pennsylvania	151	136	152	138	125	114	110	112	93	93	78[1]	55[2]
Medical College of the State of South Carolina	87	99	130	153	213	229	203	164	118	104	93[1]	61
University of South Dakota College of Medicine	.....	.....	.....	3	11	7[2]	7	9	13	14	12	12
Lincoln Memorial University[9]	92	82	80	83	84	98	101	97	98	75[1]	43	21
Meharry Medical College	328	321	300	285	275	281	290	335	322	339	254	201[1]
University of Tennessee College of Medicine	164	182	167	157	119	202[2]	192	155	112	321[1]	225	159
University of West Tennessee College of Medicine and Surgery	33	40	23	35	25	35	35	37	45	73	53	27
Vanderbilt University Medical Department	158	197	215	207	209	271	279	302	265	381	294[1]	212
Baylor University College of Medicine	122	70	57	62	53	67	90	68	71	50[1]	56	59
Fort Worth School of Medicine	191	162	176	108	100	81	90	71	60	48	43	50
University of Texas Department of Medicine	164	186	188	198	211	206	177[2]	161	153	172	169	215
University of Utah School of Medicine	.....	30	46	28	18	30[1]	19[2]	12	23	20	27	23
University of Vermont College of Medicine	185	170	165	142	166	178	186	176	140[1]	117	102	76
Medical College of Virginia	209	242	212	215	206	191	210	242	240	386[10]	339	206[2]
University of Virginia Department of Medicine	145	125	134	106	88	87	79[2]	82	91	104	108	114
West Virginia University School of Medicine	36	35	45	24	40	27	13	15[2]	8	21	19	17
Marquette University School of Medicine	174	139	130	147	166	266	253	242	283[11]	165[1]	125	87[2]
University of Wisconsin Medical School	.....	.....	.....	76[7]	32	48	48	60	66	83	98	101
Enrolment in colleges now extinct or merged	9,164	8,680	7,855	6,051	5,237	4,835	3,385	2,582	1,910	645	329	.....
Totals	26,147	25,504	24,376	22,602	22,145	21,526	19,786	18,412	17,015	16,502	14,891	14,022

1. First enrolment under the entrance requirement of one year of college work.
2. First enrolment under the entrance requirement of two years of college work.
3. First enrolment for four classes. Leland Stanford adopted the higher entrance standard in 1909.
4. Combined enrolment after merger of the Atlanta College of Physicians and Surgeons with the Atlanta School of Medicine in 1913.
5. Rush Medical College began the requirement of two years of college work in 1904.
6. Johns Hopkins, Harvard and Western Reserve adopted the higher entrance standard, respectively, in 1896, 1900 and 1901.
7. Dartmouth Medical School and Leonard Medical School discontinued the teaching of the last two or clinical years of medicine in 1914.
8. Has enroled no students since 1914. Is nominally existing to graduate classes already enroled at that time.
9. Combined enrolment after merger of the University of Nashville in 1909. The larger class in 1914 followed the merger of the Memphis Hospital Medical College in 1913.
10. Combined enrolment after the merger of the University College of Medicine in 1913.
11. Combined enrolment of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons, which in 1912 were joined to form the Marquette University School of Medicine. Figures given previous to 1913 are the annual enrolments of the Milwaukee Medical College which was the Medical Department of Marquette University.
12. The enrolment for 1915-1916 was in the Kansas City College of Medicine and Surgery, the evident successor to, or offshoot from, the Eclectic Medical University.
13. Figures for 1908 to 1913 are for the Starling-Ohio Medical College.
14. Figures given are for the Medical College of Ohio from 1905 to 1909.

(Continued from page 595)

two-thirds, were listed among Class A (acceptable) colleges[3] by the Council on Medical Education; four were Class B and two were Class C colleges. Among the eight Class A colleges having these low fees are the schools of medicine of the state universities of Colorado, Iowa, Michigan, Mississippi, Missouri, North Dakota, South Dakota, Texas and Utah. On the other hand, eight colleges listed by the Council in Class C charge fees of from $100 to $175 per year for each student. As shown on page 605, diplomas from Class C colleges are reported as not recognized by thirty-two state licensing boards. A student would be silly if he knowingly spent his time and money in a low-grade college the diplomas of which were not recognized by many states,[4] when in the same time and for even less money he could attend one of the best-equipped colleges, the diplomas of which were recognized everywhere. Although forty-one colleges listed in Class A charge fees ranging from $150 to $275 per year for each student, the actual expense for

TABLE 13.—COLLEGE FEES

Total Fees	Number of Colleges			
	Class A*	Class B	Class C†	Total
$ 50 or less	3	3	..	6
50 to $ 75	3	1	1	5
75 to 100	7	..	1	8
100 to 125	7	3	1	11
125 to 150	6	3	3	12
150 to 175	23	3	4	30
175 to 200	9	2	..	11
200 or above	9	1	..	10
Totals	67	16	10	93

* Based on the latest classification of medical colleges prepared by the Council on Medical Education (see page (—).
† Information not obtained for two Class C colleges.

teaching that student in these colleges amounts to from two to three to several times these sums. In fact, accurate data secured from eighty-two medical colleges this year show that the average amount received each year from the individual student was $150, while the average amount actually expended in the training of that student for a year was $419! And among these 82 colleges were several which still made profits from running the medical schools or paid all expenses including rents or costs of new buildings from students' fees!

In this connection, a glance at Table 1 on page 588 will show that many of the Class A colleges have only from 7 to 75 students in each class, or totals of from 50 to 300 enrolled, when they could easily care for classes of 50 to 100, or total enrolments of 200 to 400 each. It is quite evident, therefore, that with the same equipment and at practically no additional expense these schools could easily accommodate two, three, or in some instances several times the number of students at present enrolled, which would greatly reduce the disproportion of expense over income from fees. A further reduction in the vast oversupply of medical schools in this country, therefore, would be in the interests of economy as well as of marked advantage to medical education.

3. See classification on page 604.
4. See also THE JOURNAL of April 8, 1916, p. 1106, the table showing in what states the diplomas of the various medical colleges are not given recognition.

COLLEGES, STUDENTS AND GRADUATES BY STATES

Illinois has heretofore had the largest number of medical colleges, but now, as shown in Table 14, the first place is held by New York, where there are ten colleges. Illinois has eight; California has seven and Pennsylvania has six colleges. This year New York has the largest number of students enrolled, having 2,161 matriculants last session, followed by Illinois with 1,990 and Pennsylvania with 1,471. In regard to the graduates, the same relative positions obtain.

TABLE 14.—MEDICAL COLLEGES, STUDENTS AND GRADUATES BY STATES

State	College		Students		Graduates		Graduates with B.S. or A.B.
	Total	Class C	Men	Women	Men	Women	
Alabama	1	..	56	....	18	....	6
Arkansas	1	..	55	1	15	1	....
California	7	2	458	75	92	17	53
Colorado	1	..	75	4	13	....	8
Connecticut	1	..	56	....	6	....	6
Dist. of Columbia	3	..	286	8	48	1	12
Georgia	2	..	315	....	140	....	5
Illinois	8	2	1,875	115	602	25	118
Indiana	1	..	156	....	34	....	28
Iowa	2	..	758	3	29	....	10
Kansas	1	..	59	6	10	1	9
Kentucky	1	..	149	....	54	....	5
Louisiana	1	..	264	1	75	....	9
Maine	1	..	66	....	30	....	6
Maryland	2	..	683	38	199	6	55
Massachusetts	4	1	787	49	157	17	80
Michigan	3	..	529	19	113	8	53
Minnesota	1	..	246	7	49	2	42
Mississippi	1	..	55	....	....	....	....
Missouri	6	2	655	19	130	5	22
Nebraska	3	1	208	8	68	3	20
New Hampshire	1	..	33	....	....	....	....
New York	10	1	2,073	88	440	16	150
North Carolina	3	..	145	1	8	....	....
North Dakota	1	..	23	....	....	....	....
Ohio	5	1	570	21	160	7	60
Oklahoma	1	..	74	1	20	....	3
Oregon	1	..	78	3	16	....	3
Pennsylvania	6	..	1,404	67	372	19	93
South Carolina	1	..	61	....	16	....	5
South Dakota	1	..	12	....	....	....	....
Tennessee	4	1	711	9	202	4	39
Texas	3	..	312	12	66	1	16
Utah	1	..	23	....	....	....	....
Vermont	1	..	76	....	13	....	1
Virginia	2	..	280	....	104	....	19
West Virginia	1	..	17	....	....	....	....
Wisconsin	2	..	177	11	45	1	3
Totals	95	11	13,456	566	3,284	134	948

TABLE 15.—STATISTICS ACCORDING TO COLLEGE CLASSIFICATION

Colleges*			Students		Graduates	
	Number	Per Cent.	Number	Per Cent.	Number	Per Cent.
Class A	68	68.7	11,102	79.6	2,630	74.7
Class B	18	18.2	2,047	14.9	695	19.8
Class C and unclassified	13	13.1	773	5.5	193	5.5
Totals	99	100	14,022	100	3,518	100

* Includes 4 colleges which will hold no more sessions.

Table 15 shows the colleges existing during the last session and their students and graduates grouped according to their rank in the classification of the Council on Medical Education. As will be noted,

there were sixty-eight colleges in Class A, eighteen in Class B, twelve in Class C, and one unclassified. It is encouraging to note that 79.6 per cent. of all students were enrolled in the 68.7 per cent. of colleges which are in Class A, and that these colleges turn out 74.7 per cent. of all graduates. At the other extreme, only 5.5 per cent. of all students and all graduates respectively were from the 13.1 per cent. of colleges rated in Class C.

COLLEGE NOTES

Colleges Closed.—Two medical colleges were closed this year, the Medico-Chururgical College of Philadelphia, which merged with the University of Pennsylvania as its graduate School of Medicine, and the Georgia College of Eclectic Medicine and Surgery of Atlanta, which has become extinct.

New Colleges.—Two new colleges have been organized during the year. One was the Southwest College of Medicine and Hospital, Homeopathic, which occupies the same building as the Kansas City Hahnemann Medical College, which closed last year. It is reported not recognized by the Missouri State Board of Health after an inspection was made. The other is the Kansas City College of Medicine and Surgery, Eclectic, an offshoot of, if not the successor to, the notorious Eclectic Medical University, from which it apparently led away the entire student enrolment. No information has been received to indicate that the child will differ in character from its parent.

A group of men have revived the charter of the old Middlesex College of Cambridge, Mass. It is evident that the institution is furnishing M.D. degrees to osteopaths and possibly other drugless practitioners. It is therefore to be classed with drugless cult colleges.

Special Items Concerning Medical Education

California.—Leland Stanford Junior University School of Medicine is planning to erect a new hospital during the present summer, at a cost of $500,000.

——The University of California has received further gifts of $25,616.50 to the fund for the new University Hospital, which will be completed by the end of the present year, at a cost of over $600,000. The University has announced that in the immediate future it will erect a new building for the departments of anatomy and pathology, to cost $150,000; an outpatient building, to cost $100,000; a nurses' home, to cost $100,000, and that alterations costing $30,000 will be made on the present hospital building to fit it for use for the departments of physiology and physiological chemistry. Another scholarship, amounting to $400 per annum, to be known as the William Watt Kerr scholarship, has been established at the University of California by the medical alumni of that institution.

Connecticut.—The Yale Corporation has voted to admit a limited number of women students to the School of Medicine of Yale University.

——The New Brady Memorial Laboratory, the cost of which, including equipment, will be $125,000, is in course of construction and will be finished this fall. A new Roentgen-ray plant for the New Haven Hospital, the teaching institution of the School of Medicine of Yale University, is being erected and will be completed before the opening of the next college session. The school received $14,845 by the will of Norman B. Bayley.

Georgia.—The Atlanta Medical College will require two years of college work for admission beginning with the session of 1918-19. The school has secured $25,000 toward an endowment fund.

——The University of Georgia Medical Department has increased its entrance requirements to two years of college work for all students matriculating in the session of 1918-19 and thereafter.

Illinois.—The University of Illinois College of Medicine will commence immediately the erection of an eight-story clinical building, to cost $250,000. This will comprise the first unit of the school's new plant, and will provide a dispensary, operating rooms, a floor for medical cases, one for surgical and one for obstetrical cases.

Iowa.—The State University of Iowa College of Medicine has set aside $42,000 for the erection of an isolation hospital having a capacity of forty beds, work on which has already been begun.

Kansas.—The University of Kansas School of Medicine received real and personal property valued at about $25,000 by the will of Dr. J. L. Porter.

Louisiana.—Commencing with the session of 1918-19 Tulane University of Louisiana School of Medicine will require two years of college work for admission.

Maine.—Bowdoin Medical School received from Dr. Thomas Upham Coe a donation of $27,000 for the erection of an infirmary.

Maryland.—The University of Maryland School of Medicine and College of Physicians and Surgeons has increased its entrance requirements to two years of college work for all students matriculating in the session of 1918-19 and thereafter. The institution has received an appropriation of $25,000 a year for two years from the state legislature.

——A valuable collection of periodicals, monographs and other medical books, consisting of more than 4,000 volumes, was presented to the Johns Hopkins Hospital by Dr. Howard A. Kelly. Most of the books deal with special work in gynecology and obstetrics and are valued at about $25,000.

Michigan.—The University of Michigan received $6,000 by the will of Dr. Florence Huson. The sum is to be used to defray the expenses of women students, preferably those in the medical department.

Missouri.—The St. Louis University School of Medicine will require two years of college work for admission beginning with the session of 1918-19. A memorial fund amounting to $2,200 was raised by friends of the late Dr. Jessie S. Myer and presented to the school for the purchase of books on internal medicine.

——The General Education Board has appropriated $250,000 more for the Medical School of Washington University, making a total donation of $1,000,000 toward a gift of $1,500,000, to be used in placing the teaching of medicine, surgery and pediatrics on the so-called full-time basis. The school received a gift of $166,000 from Edwin Mallinckrodt and a similar amount from John W. Milliken.

Nebraska.—The Board of Regents of the University of Nebraska have approved plans for a new hospital to be erected in connection with the College of Medicine. The building is to be five stories in height and will have six wards, three receiving rooms, six groups of isolation rooms and the necessary operating rooms, operating amphitheater and rooms for administration and service.

New York.—Albany Medical College received $41,000 from five citizens of Albany to meet this year's deficit in the running expenses. A gift of $12,635.20 was provided by the will of Dr. John M. Bigelow.

——The entrance requirements of the Long Island College Hospital, for students who enter in the session of 1918-19 and thereafter, will be two years of college work. The institution received $75,000 by the will of Mrs. Katherine S. Leavitt; a bequest of $20,000 from Francis Ripley and $5,000 from an anonymous benefactor.

——Commencing with the session of 1918-19 the entrance requirements of the University and Bellevue Hospital Medical College will include two years of college work.

——The New York Medical College and Hospital for Women has received contributions amounting to $62,000 toward the $250,000 fund expected to be raised during the year. Of this amount $10,000 was contributed by W. W. Cole and $2,000 by Dr. Cornelia C. Brant, the dean of the college. The institution received a donation of $5,000 by the will of Colonel Edward M. Knox and a gift of $1,000 for laboratory equipment from Dr. Marshall O. Terry.

North Carolina.—A bequest of $1,000 was received by the Leonard Medical School by the will of the late Dr. Samuel Guy of Virginia.

North Dakota.—The North Dakota legislature at its last session appropriated $2,500 for an equipment fund for the School of Medicine of the University of North Dakota.

Ohio.—The Ohio State University College of Medicine will require two years of college work for admission in 1916-1917 and thereafter.

——**The University of Cincinnati College of Medicine** has received $10,000 from Mr. Charles Boldt, to be used in furnishing and remodeling rooms set aside in the Cincinnati General Hospital for the outpatient clinic. In addition, Mr. Boldt will contribute $1,000 per year for five years toward the support of the clinic which will be opened October 1. The annual report of the children's clinic of the college shows that during 1915, 2,300 children made more than 10,000 visits to the clinic. The university has received gifts of $600 each from Henry Strauss, Casper H. Rowe, Adam A. Kramer and Albert Lackman for scholarships in its medical department.

——A bequest of $50,000 for the Western Reserve University School of Medicine was provided by the will of Robert R. Rhodes. Plans for the removal of the School of Medicine, the Babies' Dispensary and the Lakeside Hospital to a tract of land on Euclid Avenue, near the Adelbert College campus, have been approved by the trustees of the university.

Oregon.—Four business men of Portland have contributed $25,000 toward the establishment of new buildings for the Department of Medicine of the University of Oregon. This makes available the $50,000 appropriated by the state. The school received a donation of $5,000, from an anonymous benefactor, with the condition that nine other gifts of the same amount shall be secured.

Pennsylvania.—The Hahnemann Medical College of Philadelphia will require two years of college work for admission beginning with the session of 1917-18. The institution will receive at least $50,000 as an endowment through the will of Dr. Edward R. Greggs. A bequest of $35,000 for the school was provided by the will of Jacob E. Neaife, which became operative in January, through the death of a daughter of Mr. Neaife.

——Jefferson Medical College has advanced its requirements for admission to two years of college work, including courses in physics, chemistry and biology, with laboratory work, and either French or German, for matriculants of the session of 1917-18. The promised gift of $100,000 by Daniel Baugh became available for the college in June, when subscriptions for a like sum were completed.

——Conditional bequests amounting to $150,000 have been received by the Medico-Chirurgical College of Philadelphia. A bequest for the endowment of a chair in physiology in the college was provided by the will of Mrs. Ott. An appraisement of the estate in 1905 gave this a value of $73,717.

——The Woman's Medical College of Philadelphia has established a fellowship in obstetrics. It carries with it the sum of $1,000 for twelve months' work and is open to any woman graduate of an accredited medical college who has served as intern for at least one year in a hospital with an obstetric service, has spent at least one year in further practice and who intends to continue in the practice of obstetrics. Two new scholarships in the college amounting to $225 and $250, respectively, have been provided by friends of the institution.

South Carolina.—The Medical College of the State of South Carolina received $1,000 through an anonymous benefactor, to be used in purchasing equipment for the outpatient department.

Tennessee.—Meharry Medical College has secured pledges for the greater portion of the $10,000 endowment fund, a campaign for which was recently launched by the school's alumni.

Texas.—Beginning with the session of 1917-18 the University of Texas Department of Medicine will require two years of college work for admission. Improvements and additions amounting to $80,000 for the John Sealy Hospital, which is connected with the university, are contemplated by Mr. John Sealy.

Virginia.—Pledges of over $250,000 for the erection of a hospital for contagious diseases, a hospital for colored patients and a nurses' home, to be departments of the Memorial Hospital, the teaching hospital of the Medical College of Virginia, have been received by the college.

Wisconsin.—At the commencement exercises in June the members of this year's graduating class of the Marquette University School of Medicine announced that they had each taken out endowment insurance in the sum of $250, under a twenty-year plan, and that in 1936 there would go to the university $11,500 as a memorial to the class.

Ontario.—Heretofore the Medical Council of Canada has included in their rules governing the practice of medicine in that province a clause requiring that graduates of medical schools in the United States be required to attend the fifth year in one of the medical schools of that province to be eligible for examination. This was a discrimination against the better medical schools in the United States. The matter was taken up by the Council on Medical Education and the discriminatory clause has been rescinded.

Funds for Research

The Rockefeller Foundation has provided funds for the establishment of a school of hygiene and public health in connection with Johns Hopkins University. A site will be purchased and a suitable building erected, provided with laboratories and departments needed in such a school. A special building for the institute of hygiene will be the central and principal feature of the school. This will have its own laboratories and facilities and its own staff of full time teachers. The school will be opened in October, 1917.

The Johns Hopkins Hospital has received $7,500 from Mr. Kenneth Dows to enlarge and equip the Phipps Tuberculosis Dispensary and $17,500 as an annuity for five years to support a research fund. Several thousand dollars have been expended to equip the rooms opened recently for research work in pathology. A fund of $22,000 has been raised to support the work for the next three years. A gift of $150,000 to Johns Hopkins Hospital was provided by the will of Miss Jessie Gillender. A part of the money is to be used in scientific research into the cause, prevention and cure of epilepsy. This laboratory will probably be connected with the Henry Phipps Psychiatric Clinic.

The Medical School of Harvard University received a bequest of $75,000 by the will of Morrill Wyman, the income of which is to be used for medical research. The Cancer Commission of Harvard University is to receive the income from $25,000 by the will of William Endicott.

The Washington University Medical School received a gift providing for a research fellowship in surgery for 1916, from an anonymous benefactor.

A gift of $100,000 was received by the College of Physicians and Surgeons of Columbia University from the executors of the estate of the late Emil C. Bondy as an endowment fund for medical research, chiefly in regard to cancer.

Western Reserve University School of Medicine has received a fund of $50,000 to further the study of obstetrics.

By the will of Dr. J. William White, $150,000 was received by the University of Pennsylvania School of Medicine to establish and permanently endow a professorship in surgical research.

Medical Students in Great Britain

The following is an official return from the General Medical Council* of medical students in actual attendance, during May, 1916, on courses of professional instruction, at medical schools and approved teaching institutions:

	Men	Women	Total	Men Under 18	Men from Outside the United Kingdom
First year.....	1,422	636	2,058	480	202
Second year.....	783	295	1,078	26	129
Third year.....	519	163	682	0	146
Fourth year.....	1,078	145	1,223	0	198
Fifth year.....	922	140	1,062	0	115
Totals.....	4,724	1,379	6,103	515	678
Per Cent.	77.4	22.6			

Kings College Medical Faculty of London has thrown open its doors to women, beginning Oct. 31, 1916. This was an inevitable step following the amalgamation of Kings College for Women with Kings College.

* Brit. Med. Jour., June 3, 1916, p. 1133.

STANDARDS OF THE COUNCIL ON MEDICAL EDUCATION OF THE AMERICAN MEDICAL ASSOCIATION

Essentials of an Acceptable Medical College

(Revised to Aug. 1, 1916)

The following outline of the essentials of an acceptable medical college was issued by the Council on Medical Education of the American Medical Association for its suggestive value in the rapid development in progress in the medical colleges of the United States. It also represents the basis on which medical colleges are rated in the Council's classifications.

ADMISSION OF STUDENTS

1. A strict enforcement of the following standards and requirements, the college itself to be held responsible for any instances in which they are not enforced.

Note.—Since the product of the medical school depends largely on the quality of the students admitted, in rating medical colleges, special emphasis is laid by the Council on the strictness and honesty by which the standards of admission and advanced standing are administered. By the admission of unfit students the school is handicapped from the very beginning and, in the opinion of the Council, deserves a low rating regardless of its equipment, its clinical facilities and its teaching force.

2. A requirement for admission by the medical school of a four-year high school education, and in addition at least one year of college work, and, after Jan. 1, 1918, two years of college work. This premedical college work must have been taken in a college of arts and sciences approved by the Council or in lieu thereof the student must have an equivalent education as demonstrated by an examination approved by the Council.

I. HIGH SCHOOL REQUIREMENTS

(a) For admission to the preliminary college year, students must have completed *a four-year course of at least fourteen units* in a standard accredited high school or other institution of standard secondary school grade, or have its equivalent as demonstrated by an examination conducted by a duly authorized examiner of the College Entrance Examination Board, or by the authorized examiner of a standard college or university who has been approved by the Council on Medical Education, or by an examiner whose certificates are accepted by such approved standard colleges or universities. *A detailed statement of attendance at the secondary school, and a transcript of the student's work should be kept on file by the medical school authorities.* This evidence of actual attendance at the secondary school or schools should be obtained for every student no matter whether he is admitted to the freshman or to advanced classes.

(b) The subjects for which credits for admission to the preliminary college year may be accepted are shown in the accompanying schedule.

II. PRELIMINARY COLLEGE WORK

(c) Until Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools, in addition to the high school work specified above, is one year of collegiate work, extending through thirty-two weeks and covering thirty semester hours[1] which must have been completed by the student before he is eligible for admission. This college work should include courses of at least eight semester hours each in physics, chemistry and biology, including laboratory work. It is urged that the student obtain a reading knowledge of a modern language, preferably French or German. These subjects and the amounts required are shown in the accompanying schedule.

After Jan. 1, 1918, the minimum requirement for admission to acceptable medical schools will be two years (sixty semester hours) of work in a college of arts and sciences approved by the Council on Medical Education or its actual educational equivalent as demonstrated by an examination approved by the Council. It is suggested that in addition to the courses outlined in the preceding paragraph, this two year course include a course in organic chemistry, a second year of biology and more work in the modern language unless the student already possesses a reading knowledge of it.

APPROVED COLLEGES OF ARTS AND SCIENCES

3. (a) A list of colleges of arts and sciences approved by the Council on Medical Education will be prepared and published from time to time. By an approved college (of arts and sciences) is meant one whose standing has been vouched for by some standardizing agency in whose methods the Council has confidence. To be recognized a college must have sufficient scientific equipment and maintain laboratories in the premedical sciences. It must have ample endowment to maintain a sufficient corps of teachers. Membership in some national organization or association of colleges will be favorably regarded by the Council and, in the absence of such membership, careful investigation will be made of the causes of exclusion.

(b) An approved college must also maintain national standards for admission to its freshman class. Students must be required to complete a four-year high school course, and the requirements for admission to the premedical course must be fully equal to the requirements for the regular B. S. course of the college. The admission of students must be in the hands of a responsible committee or examiner whose records shall always be open for inspection. Documentary evidence of the students' preliminary education should be obtained and kept on file. Particular attention will be given to the character of high schools from which certificates are received. Colleges should recognize only certificates from high schools approved by commissions or boards of associations of colleges and secondary schools or other agencies approved by the Council. When such endorsement is lacking the college should be slow in accepting certificates without the support of entrance examinations. Undue liberality in the acceptance of certificates from secondary schools unendorsed by approved standardizing agencies will be registered by the Council as a failure to comply with its requirements and the college will be dropped from the approved list.

(c) Unless the university examiner and his records are closely accessible, the medical school should obtain and keep

1. A semester hour is the measurement of work represented by one class period per week for half of the college year. Each laboratory period to be so valuated must extend over at least two hours.

SCHEDULE OF SUBJECTS OFFERED IN ACADEMIC AND SECONDARY SCHOOLS, CREDITS IN WHICH ARE ACCEPTABLE FOR ENTRANCE TO THE PREMEDICAL COLLEGE COURSES

Subjects	Units	Required	Elective
ENGLISH LITERATURE AND COMPOSITION	3-4	3	1
MATHEMATICS			
Elementary algebra	1	1	
Advanced algebra	½-1	..	½-1
Plane geometry	1	1	
Solid geometry	½	..	½
Trigonometry	½	..	½
LATIN	1-4	*	1-4
Greek	1-4	*	1-3
FRENCH	1-4	2*	1-4
GERMAN	1-4	2*	1-4
Other Foreign Languages	2	..	2
HISTORY			
Ancient history	1	**	1
Medieval and modern history	1	**	1
English history	½-1	**	½-1
American history	½-1	**	½-1
Civil government	½-1	**	½-1
SCIENCE †			
Botany	½-1	..	½-1
Zoology	½-1	..	½-1
Chemistry	1	..	1
Physics	1	..	1
Physiography	½-1	..	½-1
Physiology	½-1	..	½-1
Astronomy	½	..	½
Geology	½-1	..	½-1
Agriculture	1-2	..	1-2
Bookkeeping	1	..	1
Business Law	½	..	½
Commercial geography	½-1	..	½-1
Domestic science	1-2	..	1-2
Drawing, freehand and mechanical	½-2	..	½-2
Economics and economic history	½-1	..	½-1
Manual training	1-2	..	1-2
Music: Appreciation or harmony	1-2	..	1-2

A *unit* is the credit value of at least 36 weeks' work of 4 or 5 recitation periods per week, each recitation period to be of not less than 40 minutes. In other words, a unit represents a year's study in any subject in a secondary school constituting approximately a quarter of a full year's work. A satisfactory year's work in any subject cannot be accomplished under ordinary circumstances in less than 120 sixty-minute hours, or their equivalent.

Required Branches: Of the 14 units of high school work it is suggested that the subjects in capitals aggregating 8 units be required. Other work to the amount of at least 7 units may be made up from any of the other subjects of the above schedule.

* Two units of Greek or Latin may be substituted for the two required units of French or German.

** One unit of history and civics prescribed.

† Credentials of each science course must include evidence of laboratory work.

on file documentary evidence of all students' preliminary education including both high school and collegiate work. It is particularly important that the records show that the required amount of work in the premedical sciences, including laboratory exercises, has been completed.

(d) Premedical college courses given in or by medical schools, or advance years taken in high schools, will not be considered as acceptable unless they have been investigated and approved by some association of colleges and secondary schools or other approved agency having to do with the standardizing of liberal arts colleges.

MEDICAL SCHOOL REQUIREMENTS

4. The college should require that students be in actual attendance in the college *within the first week* of each annual session and thereafter.

5. Actual attendance at classes should be insisted on except for good cause, such as for sickness, and under no circumstances should credit be given for any course where the attendance has been less than 80 per cent. of the full time.

6. (a) Full advanced standing may be granted to students only for work done in other acceptable colleges, and in granting advanced standing there should be no discrimination against the college's full-course students. (b) In *exceptional cases* students from Class B medical schools may be given advanced standing but not higher than *entrance* to the third year (junior) class, and no credit should be given in any subject except on recommendation of the head of the department teaching that subject. (c) In *exceptional cases* students from Class C colleges may be given advanced standing but not higher than *entrance* to the second year (sophomore) class, and then only after thorough examinations in all first year subjects have been passed.

SCHEDULE

Subject	Lectures or Recitations per Week	Laboratory Periods* per Week	Total Hours per Semester	Total Semester Hours per Year
Physics, 1.....	2 or 3	2 or 1	4	8
Chemistry, 1.....	2	2	4	8
Biology, 1.....	2 or 3	2 or 1	4	8
Elective, preferably French or German, 2.....	4 or 3	.....	4 or 3	8 or 6
Totals.....	9 or 11	6 or 5	16 or 15	32 or 30

* Each laboratory period must extend at least two hours.

SUPERVISION, EQUIPMENT, TEACHERS

7. There should be careful and intelligent supervision of the entire school by a dean or other executive officer who holds, and has sufficient authority to carry out fair ideals of medical education as determined by modern knowledge.

8. There should be a good system of records showing conveniently and in detail the credentials, attendance, grades and accounts of the students by means of which an exact knowledge can be obtained regarding each student's work. Records should also be kept showing readily the attendance of patients at the teaching hospitals and dispensaries; the maternity cases attended by students, and the postmortem cases used in teaching.

9. The college should have a fully graded course covering four years of at least thirty-two weeks each, exclusive of time required for matriculation and holidays, and at least thirty hours per week of actual work; this course should be clearly set forth in a carefully prepared and printed schedule of lectures and classes.

(a) The college should give two years of work consisting largely of laboratory work in thoroughly equipped laboratories in anatomy, histology, embryology, physiology, chemistry (inorganic, organic and physiologic), bacteriology, pathology, pharmacology, therapeutics and clinical diagnosis. Present-day medical knowledge makes it essential that these subjects be in charge of full-time, well-trained teachers.

(b) Two years of clinical work largely in hospitals and dispensaries, with thorough courses in internal medicine (including physical diagnosis, pediatrics, nervous and mental diseases), surgery (including surgical anatomy and operative surgery on the cadaver), obstetrics, gynecology, laryngology, rhinology, ophthalmology, otology, dermatology, hygiene and medical jurisprudence.

(c) As soon as conditions warrant, a fifth undergraduate year should be required which should be spent by the student as an intern in an approved hospital.

10. The college should provide at least *six expert, thoroughly trained professors* in the laboratory branches, salaried so that they may devote their entire time to instruction and to that research without which they cannot well keep up with the rapid progress being made in their subjects.[2] There should also be a sufficient number of assistants in each department to look after the less important details. For colleges having *sixty students or less* in each class, there should be *at least one full-time salaried assistant each in the departments* of (a) anatomy, (b) physiology, (c) pathology and bacteriology, and (d) physiologic chemistry and pharmacology, and *one additional assistant in each of these departments should be provided for each additional thirty students enrolled.* This represents a low average of the full-time assistants already employed by the acceptable medical colleges.

11. The faculty should be thoroughly organized and should be made up of graduates of institutions recognized as medical colleges and who have had a training in all departments of medicine. Nonmedical men should be selected as teachers in medical schools only under exceptional circumstances and only when medical men of equal special capacity are not available. Faculty members should be appointed because of their ability as teachers and not because they happen to be on the attending staff of a hospital or for other like reasons.

CLINICAL FACILITIES

12. The college should own or entirely control a hospital in order that students may come into close and extended contact with patients under the supervision of the attending staff. This hospital should be in close proximity to the college and have a daily average (for senior classes of 100 students *or less*) of not less than 200 patients who can be utilized for clinical teaching, these patients to be of such character as to permit the student to see and study the common variety of surgical and medical cases as well as a fair number in each of the so-called specialties. In the use of this material it is suggested that *bedside and ward clinics* be developed for sections of from five to ten students, and that a certain number of patients in medicine, surgery and the specialties be assigned to each senior student. A well supervised clinical clerk system should also be installed. The treatment and care of these patients should be particularly observed and recorded by the student under the strict supervision of the intern, or the attending staff of the hospital.[3]

13. The college should also have ample hospital facilities for children's diseases, contagious diseases and nervous and mental diseases.

14. At least six maternity cases should be provided for each senior student, who should have actual charge of these cases under the supervision of the attending physician. Careful records of each case should be handed in by the student.

15. Facilities should be provided for at least thirty necropsies (for senior classes of 100 students *or less*) during each college session which are attended and participated in by senior students.

16. The college should own or control a dispensary, or outpatient department, the attendance to be a daily average of 100 patients (visits) (for senior classes of 100 students *or less*), the patients to be carefully classified, good histories and records of the patients to be kept and the material to be well used. The attending staff should be made up of good teachers, should be well organized and be regular in attendance.

OTHER TEACHING FACILITIES AND FINANCES

17. The college should have a working medical library to include the more modern text and reference books with the *Index Medicus* and thirty or more leading medical periodi-

2. These professors should have a definite responsibility in the conduct of the college, and their first and chief interest should be the training of medical students. It is advised that four of these professors be placed in charge of the departments of (a) anatomy, (b) physiology, (c) pathology and bacteriology and (d) physiologic chemistry and pharmacology. The other two may be assigned one to the laboratory course in histology and embryology under the department of anatomy and the other to the department of pathology and bacteriology, possibly to the course in laboratory clinical diagnosis.

3. Suggestions more in detail may be found in the "Report of the Committee on the Reorganization of Clinical Teaching," THE JOURNAL A. M. A., March 6, 1915. Reprint sent on application.

cals; the library room should be properly lighted and heated, and easily accessible to students during all or the greater part of the day; it should be equipped with suitable tables and chairs, and have a librarian in charge.

18. A working medical museum having its various anatomic, embryologic, pathologic and other specimens carefully prepared, labeled and indexed so that any specimen may be easily found and employed for teaching purposes. It is suggested that so far as possible with each pathologic specimen coming from postmortems there also be kept the record of the postmortem, the clinical history of the patient on whom the necropsy was held and microscopic slides showing the minute structures of the disease shown in the gross specimen.

19. There should be sufficient dissecting material to enable each student individually to dissect at least the lateral half of the human cadaver; to provide cross-sections and other demonstration material and to allow of a thorough course for each senior in operative surgery on the cadaver.

20. For modern experimental laboratory work in physiology, pharmacology and bacteriology as well as for a reasonable amount of medical research, a supply of animals—frogs, turtles, rabbits and guinea-pigs, if not also cats and dogs—is essential. Proper provision, also, is necessary for the housing and care of such animals. In any use made of animals great care should be used to prevent needless suffering and work by students should be carefully supervised.

21. A supply of such useful auxiliary apparatus as a stereopticon, a reflectoscope, carefully prepared charts, embryologic or other models, manikins, dummies for use in bandaging, a Roentgen ray and other apparatus now so generally used in medical teaching.

22. The college should show evidences of thorough organization and of reasonably modern methods in all departments and evidences that the equipment and facilities are *being intelligently used* in the training of medical students.

23. A clear statement of the college's requirements for admission, tuition, time of attendance on the classes, sessions, courses offered and graduation should be clearly set forth, together with complete classified lists of its matriculants and latest graduating class in regular annual catalogues or announcements.

24. Statistics show[4] that modern medicine cannot be acceptably taught by a medical school depending solely on the income from students' fees. No medical school should expect to be retained in Class A, therefore, which does not have an annual income of at least $25,000 in addition to the amount obtained from students' fees.

NOTE.—Correspondence from medical colleges regarding the above requirements is invited, and further suggestions or information available will be gladly furnished.

Grading of Medical Colleges

All medical colleges are rated by the Council on Medical Education on a civil service basis on a scale of 1,000 points. The data relating to each college are grouped under ten general heads in such manner that the groups have as nearly equal weight as possible, each group allowing a possible 100 points (10 per cent.) out of a possible 1,000 points (100 per cent.). The ten heads under which the data are arranged are as follows:

1. Showing of graduates before state boards and other evidences of the training received.
2. Enforcement of a satisfactory preliminary educational requirement, granting of advanced standing and the character of the records.
3. Character of curriculum, grading of course, length of session, time allowed for matriculation and supervision.
4. Medical school buildings; light, heat, ventilation, cleanliness.
5. Laboratory facilities and instruction.
6. Dispensary facilities and instruction.
7. Hospital facilities and instruction, maternity work, necropsies, specialties.
8. Faculty, number and qualifications of trained teachers, full-time instructors, and assistants, especially of the laboratory branches, organization, and extent of research work.
9. Extent to which the school is conducted for properly teaching the science of medicine rather than for the profit of the faculty directly or indirectly.
10. Possession and use made of libraries, museums, charts, stereopticons, etc.

Class A colleges are those which are acceptable; Class B, those which, under their present organization, might be made acceptable by general improvements, and Class C, those which require a complete reorganization to make them acceptable.

4. See Medical College Finances, THE JOURNAL A. M. A., April 8, 1916, p. 1115.

CLASSIFICATION OF MEDICAL COLLEGES

Revised to Aug. 1, 1916

CLASS A—ACCEPTABLE MEDICAL COLLEGES

ALABAMA

University of Alabama School of Medicine.....Mobile

CALIFORNIA

Leland Stanford Junior Univ. School of Med..San Francisco
University of California Medical School.....San Francisco

COLORADO

University of Colorado School of Med.....Boulder-Denver

CONNECTICUT

Yale University School of Medicine.....New Haven

DISTRICT OF COLUMBIA

Georgetown University School of Medicine.....Washington
George Washington University Medical School..Washington
Howard University School of Medicine.....Washington

GEORGIA

Atlanta Medical College.....Atlanta
University of Georgia Medical Department.....Augusta

ILLINOIS

Northwestern University Medical School.....Chicago
Rush Medical College (University of Chicago).....Chicago
University of Illinois College of Medicine.....Chicago

INDIANA

Indiana Univ. School of Med.....Bloomington-Indianapolis

IOWA

State University of Iowa College of Medicine....Iowa City
State Univ. of Iowa Coll. of Homeopathic Med....Iowa City

KANSAS

University of Kansas School of Med....Lawrence-Rosedale

KENTUCKY

University of Louisville Medical Department....Louisville

LOUISIANA

Tulane Univ. of Louisiana School of Med....New Orleans

MAINE

Bowdoin Medical School.....Brunswick-Portland

MARYLAND

Johns Hopkins University Medical Department....Baltimore
University of Maryland School of Medicine and
the College of Physicians and Surgeons[5].....Baltimore

MASSACHUSETTS

Boston University School of Medicine.....Boston
Medical School of Harvard University.....Boston
Tufts College Medical School.....Boston

MICHIGAN

Detroit College of Medicine and Surgery.....Detroit
University of Michigan Medical School.....Ann Arbor
University of Mich. Homeopathic Med. School....Ann Arbor

MINNESOTA

University of Minnesota Medical School.....Minneapolis

MISSISSIPPI

University of Mississippi Dept. of Medicine*.....Oxford

MISSOURI

St. Louis University School of Medicine.....St. Louis
University of Missouri School of Medicine*.....Columbia
Washington University Medical School.....St. Louis

NEBRASKA

University of Nebraska College of Medicine.....Omaha

NEW HAMPSHIRE

Dartmouth Medical School*.....Hanover

5. In 1915 the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore were merged into one institution which retains the double title.

* These colleges give only the first two years of the medical course.

NEW YORK

Albany Medical College.....Albany
Columbia Univ. Coll. of Phys. and Surgs....New York City
Cornell University Medical College.....New York City
Fordham University School of Medicine....New York City
Long Island College Hospital.....Brooklyn
Syracuse University College of Medicine.....Syracuse
University and Bellevue Hospital Med. Coll..New York City
University of Buffalo Department of Medicine.....Buffalo

NORTH CAROLINA

University of North Carolina School of Med.* Chapel Hill
Wake Forest College School of Medicine*....Wake Forest

NORTH DAKOTA

University of North Dakota School of Medicine*..University

OHIO

Ohio State University College of Medicine.....Columbus
University of Cincinnati College of Medicine.....Cincinnati
Western Reserve University School of Medicine..Cleveland

OREGON

University of Oregon Department of Medicine.....Portland

PENNSYLVANIA

Hahnemann Medical College and Hospital.....Philadelphia
Jefferson Medical College of Philadelphia.....Philadelphia
University of Pennsylvania School of Med....Philadelphia
University of Pittsburgh School of Medicine....Pittsburgh
Woman's Medical College of Pennsylvania....Philadelphia

SOUTH CAROLINA

Medical College of the State of South Carolina[6]..Charleston

SOUTH DAKOTA

University of South Dakota College of Medicine*..Vermilion

TENNESSEE

Vanderbilt University Medical Department.....Nashville
University of Tennessee College of Medicine.....Memphis

TEXAS

Baylor University College of Medicine†.....Dallas
University of Texas Department of Medicine.....Galveston

UTAH

University of Utah School of Medicine*.....Salt Lake City

VERMONT

University of Vermont College of Medicine.....Burlington

VIRGINIA

Medical College of Virginia.....Richmond
University of Virginia Department of Med....Charlottesville

WISCONSIN

Marquette University School of Medicine.....Milwaukee
University of Wisconsin Medical School*.....Madison

Total, 67.

CLASS B—COLLEGES NEEDING GENERAL IMPROVEMENTS TO BE MADE ACCEPTABLE

ARKANSAS

University of Arkansas Medical Department.....Little Rock

CALIFORNIA

College of Physicians and Surgeons.....Los Angeles
Oakland College of Medicine and Surgery.....Oakland

ILLINOIS

Loyola University Medical Department†.....Chicago
Chicago College of Medicine and Surgery.....Chicago
Hahnemann Medical College and Hospital.....Chicago

NEBRASKA

John A. Creighton Medical College.....Omaha

NEW YORK

New York Homeopathic Medical College and Flower Hospital .....New York City

NORTH CAROLINA

Leonard Medical School*.....Raleigh

OHIO

Eclectic Medical College.....Cincinnati

OKLAHOMA

Univ. of Oklahoma School of Med..Norman-Oklahoma City

PENNSYLVANIA

Temple University Department of Medicine.....Philadelphia

TENNESSEE

Meharry Medical College.....Nashville

TEXAS

Fort Worth School of Medicine.....Fort Worth

WEST VIRGINIA

West Virginia University School of Med.*....Morgantown

Total, 15.

CLASS C—COLLEGES REQUIRING A COMPLETE REORGANIZATION TO MAKE THEM ACCEPTABLE

CALIFORNIA

College of Medical Evangelists....Loma Linda-Los Angeles
College of Physicians and Surgeons.....San Francisco

ILLINOIS

Chicago Hospital College of Medicine.....Chicago
Jenner Medical College.....Chicago

MASSACHUSETTS

College of Physicians and Surgeons[8].....Boston

MISSOURI

Eclectic Medical University[9].....Kansas City
Southwest School of Medicine and Hospital[9]....Kansas City
National Univ. of Arts and Sciences Med. Dept.[10]..St. Louis

NEBRASKA

Lincoln Medical College[11].....Lincoln

NEW YORK

New York Med. Coll. and Hosp. for Women..New York City

OHIO

Ohio State Univ. Coll. of Homeopathic Med.....Columbus

TENNESSEE

University of West Tenn. Coll. of Med. and Surg..Memphis

Total 12.

CLASSIFICATION OF CANADIAN MEDICAL COLLEGES

CLASS A

University of Toronto Faculty of Medicine....Toronto, Ont.
McGill University Faculty of Medicine.....Montreal, Que.

CLASS B

Dalhousie University Faculty of Medicine.....Halifax, N. S.
Montreal School of Medicine and Surgery....Montreal, Que.
Laval University Faculty of Medicine.....Quebec, Que.
University of Manitoba, Manitoba Medical College .....Winnipeg, Ont.

CLASS C

Queen's University Faculty of Medicine.....Kingston, Ont.
Western University Faculty of Medicine.....London, Ont.

The University of Alberta at Edmonton, besides the premedical year, gives only the first two years of the medical course as measured by that of the medical schools of the United States. It has not been inspected.

Colleges Not Recognized

The licensing boards of New Hampshire, Rhode Island and Virginia report that they recognize only the medical colleges listed in Class A.

6. Rating changed from Class B to Class A, Feb. 6, 1916.
7. Rating raised to Class A, June 12, 1916.
† Heretofore known as the Bennett Medical College.

8. Reported not recognized by the Massachusetts Medical Society.
9. Reported not recognized by the Missouri State Board of Health.
10. Formerly known as the American Medical College.
11. Formerly known as the Cotner University Medical College.

Official statement from the following thirty-four state licensing boards indicate that as a rule the colleges rated in Class C are not recognized:

Alabama	Maryland (Reg.)	Oklahoma
Arkansas (Reg.)	Michigan	Pennsylvania
Colorado	Minnesota	Porto Rico
Connecticut (Reg.)	Mississippi	Rhode Island
Delaware	New Hampshire	South Carolina
Florida (Reg.)	New Jersey	South Dakota
Georgia	New Mexico	Texas
Indiana	New York	Vermont
Iowa	North Carolina	Virginia
Kentucky	North Dakota	West Virginia
Louisiana (Reg.)	Ohio	Wisconsin
Maine		

A table (Table D) showing in what states diplomas from various medical colleges are not fully recognized appears in THE JOURNAL of April 8, 1916, on page 1106.

State Requirements of Higher Preliminary Education

There are now thirty-three states which have adopted requirements of preliminary education in addition to a standard four-year high school education. These states, the number of college years required and the time the higher requirements became effective are as follows:

State Examining Board of	Number of Years Required	Affects Students Matriculating	Affects All Graduates
Requiring Two Years:			
Alabama	2	1915-16	1919
Arizona	2	1918-19	1922
Colorado	2	1910-11	1914
Indiana	2	1911-12	1915
Iowa	2	1911-12	1915
Maryland	2	1918-19	1922
Minnesota	2	1908-09	1912
New Hampshire	2	1915-16	1919
New Jersey	2	1917-18	1921
New Mexico	2	1918-19	1922
North Dakota	2	1908-09	1912
Oklahoma	2	1917-18	1921
Rhode Island	2	1918-19	1922
South Dakota	2	1911-12	1915
Virginia	2	1917-18	1921
Washington	2	1918-19	1922
Wisconsin	2	1915-16	1919
Requiring One Year:			
Arizona*	1	1914-15	1918
Arkansas	1	1915-16	1919
California	1	1915-16	1919
Connecticut	1	1910 11	1914
Illinois	1	1915-16	1919
Indiana*	1	1910-11	1914
Kansas	1	1910-11	1914
Kentucky	1	1914-15	1918
Louisiana	1	1915-16	1919
Maryland*	1	1914-15	1918
Michigan	1	1914-15	1918
Mississippi	1	1915-16	1919
New Hampshire	1	1914-15	1918
New Jersey*	1	1916-17	1920
North Carolina	1	1914-15	1918
Oklahoma*	1	1914-15	1918
Pennsylvania	1	1914-15	1918
Rhode Island*	1	1914-15	1918
Tennessee	1	1915-16	1919
Texas	1	1914-15	1918
Utah	1	1913-14	1917
Vermont	1	1913-14	1917
Virginia*	1	1914-15	1918
Washington*	1	1914-15	1918
West Virginia	1	1917-18	1921

* The 2-year requirement becomes effective later.

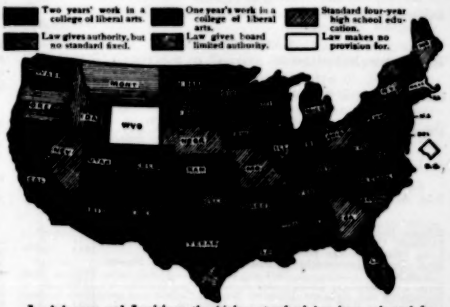
Colleges Having Higher Entrance Requirements

The forty-six medical schools* which are now requiring, as a minimum for entrance *two years* or more of work in a college of liberal arts in addition to a four-year high-school education, the year when the higher requirement became effective and the rating of each college, are as follows:

	In Effect	College Rating
ALABAMA		
University of Alabama School of Medicine	1915	A
CALIFORNIA		
College of Medical Evangelists	1915	C
College of Physicians and Surgeons, Los Angeles	1916	B
Leland Stanford Junior University School of Medicine	1909	A
University of California Medical School	1905	A
COLORADO		
University of Colorado School of Medicine	1910	A
CONNECTICUT		
Yale University School of Medicine	1909	A
DISTRICT OF COLUMBIA		
Georgetown University School of Medicine	1912	A
Howard University School of Medicine	1914	A
ILLINOIS		
Northwestern University Medical School	1911	A
Rush Medical College (University of Chicago)	1904	A
University of Illinois College of Medicine	1914	A
INDIANA		
Indiana University School of Medicine	1910	A
IOWA		
State University of Iowa College of Medicine	1910	A
State University of Iowa College of Homeopathic Medicine	1910	A
KANSAS		
University of Kansas School of Medicine	1909	A
MAINE		
Bowdoin Medical School	1916	A
MARYLAND		
Johns Hopkins University Medical Department	1893	A
MASSACHUSETTS		
Boston University School of Medicine	1916	A
Medical School of Harvard University	1900	A
MICHIGAN		
University of Michigan Medical School	1909	A
University of Michigan Homeopathic Medical School	1916	A
MINNESOTA		
University of Minnesota Medical School	1907	A

* Colleges will be omitted from this list unless evidence obtained shows that, in the admission of students, they are requiring at least sixty semester hours of preliminary collegiate work in addition to a four-year high school education.

STATE REQUIREMENTS OF PRELIMINARY EDUCATION FOR PHYSICIANS


Two years' work in a college of liberal arts.
One year's work in a college of liberal arts.
Standard four-year high school education.
Law gives authority, but no standard fixed.
Law gives board limited authority.
Law makes no provision for.

In Arkansas and Louisiana the higher standard has been adopted by the regular board only.

MISSOURI		
University of Missouri School of Medicine	1910	A
Washington University Medical School	1912	A
NEBRASKA		
University of Nebraska College of Medicine	1909	A
NEW HAMPSHIRE		
Dartmouth Medical School	1910	A
NEW YORK		
Columbia University College of Physicians and Surgeons	1910	A
Cornell University Medical College	1908	A
Syracuse University College of Medicine	1910	A
NORTH CAROLINA		
Leonard Medical School	1914	B
Wake Forest College School of Medicine	1908	A
NORTH DAKOTA		
University of North Dakota School of Medicine	1907	A
OHIO		
Ohio State University College of Medicine	1915	A
Ohio State Univ. College of Homeopathic Medicine	1916	C
University of Cincinnati College of Medicine	1913	A
Western Reserve University School of Medicine	1901	A
PENNSYLVANIA		
University of Pennsylvania School of Medicine	1910	A
University of Pittsburgh School of Medicine	1913	A
Woman's Medical College of Pennsylvania	1915	A
SOUTH CAROLINA		
Medical College of the State of South Carolina	1916	A
SOUTH DAKOTA		
University of South Dakota College of Medicine	1909	A

UTAH

University of Utah School of Medicine	1910	A

VIRGINIA

Medical College of Virginia	1915	A

WISCONSIN

Marquette University School of Medicine	1915	A
University of Wisconsin Medical School	1907	A

The thirty-eight medical colleges† which are now requiring, as a minimum for entrance one year of collegiate work in addition to a four-year high school course, the years when the requirements began and the rating of the colleges are:

ARKANSAS

	In Effect	College Rating
University of Arkansas Medical Department	1915	B

CALIFORNIA

Oakland College of Medicine and Surgery	1915	B

DISTRICT OF COLUMBIA

George Washington University Medical School	1914	A

GEORGIA

Atlanta Medical College	1914	A
University of Georgia Medical Department	1914	A

ILLINOIS

Loyola University Medical Department	1915	B
Chicago College of Medicine and Surgery	1915	B
Hahnemann Medical College and Hospital of Chicago	1914	B

KENTUCKY

University of Louisville Medical Department	1914	A

LOUISIANA

Tulane University of Louisiana School of Medicine	1910	A

MARYLAND

University of Maryland School of Medicine and College of Physicians and Surgeons	1914	A

MASSACHUSETTS

Tufts College Medical School	1914	A

MICHIGAN

Detroit College of Medicine and Surgery	1914	A

MISSISSIPPI

University of Mississippi Department of Medicine	1914	A

MISSOURI

St. Louis University School of Medicine	1910	A

NEBRASKA

John A. Creighton Medical College	1914	B

NEW YORK

Albany Medical College	1914	A
Fordham University School of Medicine	1911	A
Long Island College Hospital	1914	A
New York Homeopathic Medical College and Flower Hospital	1915	B
New York Medical College and Hospital for Women	1916	C
University and Bellevue Hospital Medical College	1912	A
University of Buffalo Department of Medicine	1914	A

NORTH CAROLINA

University of North Carolina School of Medicine	1910	A

OHIO

Eclectic Medical College	1915	B

OKLAHOMA

University of Oklahoma School of Medicine	1914	B

OREGON

University of Oregon Department of Medicine	1910	A

PENNSYLVANIA

Hahnemann Medical College and Hospital of Philadelphia	1914	A
Jefferson Medical College of Philadelphia	1914	A
Temple University Department of Medicine	1914	B

TENNESSEE

Vanderbilt University Medical Department	1914	A
University of Tennessee College of Medicine	1914	A

TEXAS

University of Texas Department of Medicine	1910	A
Baylor University College of Medicine	1913	A
Fort Worth School of Medicine	1916	B

VERMONT

University of Vermont College of Medicine	1912	A

VIRGINIA

University of Virginia Department of Medicine	1910	A

WEST VIRGINIA

West Virginia University School of Medicine	1911	A

† Colleges will be omitted from this list unless evidence obtained shows that, in the admission of students, they are requiring at least thirty semester hours of preliminary collegiate work, in addition to a four-year high school education.

The fifteen following medical colleges, now requiring one year of collegiate work for admission, have announced that all students admitted in and after the session given will be required to have completed *two years* of collegiate work:

	Session of
University of North Carolina School of Medicine	1917-18
University of Oklahoma School of Medicine	1917-18
Hahnemann Medical College of Philadelphia	1917-18
Jefferson Medical College	1917-18
University of Texas Department of Medicine	1917-18
University of Virginia Department of Medicine	1917-18
West Virginia University School of Medicine	1917-18
Atlanta Medical College	1918-19
University of Georgia Medical Department	1918-19
Tulane University School of Medicine	1918-19
University of Maryland School of Medicine and College of Physicians and Surgeons	1918-19
University of Mississippi Department of Medicine	1918-19
St. Louis University School of Medicine	1918-19
Long Island College Hospital	1918-19
University and Bellevue Hospital Medical College	1918-19

The ten following medical colleges either have not announced the higher entrance requirements or evidence has not been received to show they are in effect for all students enrolled:

	Rating
College of Physicians and Surgeons, San Francisco	C
Chicago Hospital College of Medicine	C
Jenner Medical College, Chicago	C
College of Physicians and Surgeons, Boston	C
Eclectic Medical University, Kansas City	C
Kansas City College of Medicine and Surgery	*
National University of Arts and Sciences, St. Louis	C
Southwest School of Medicine and Hospital, Kansas City	C
Lincoln Medical College, Lincoln, Neb.	C
University of West Tenn. College of Med. and Surg., Memphis	C

* This college has not been inspected.

State University Medical Schools

Twenty-nine states now have medical schools as integral parts of the state universities or—in one instance—under state control as a separate institution. These states and other interesting data regarding the medical schools are as follows:

STATE UNIVERSITY MEDICAL SCHOOLS

Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission	Medical School of State University of	Only School in State	Length of Med. Course in Years	Years of College Work for Admission
Alabama	Yes	4	2†	North Carolina	....	2	2
Arkansas	Yes	4	1	North Dakota	....	2	2†
California	....	5	2	Ohio*	....	4	2
Colorado	Yes	4	2†	Oklahoma	Yes	4	2†
Georgia	....	4	2	Oregon	Yes	4	1
Illinois	....	4	2	South Carolina	Yes	4	2
Indiana	Yes	4	2†	South Dakota	Yes	2	2†
Iowa*	Yes	4	2†	Tennessee	....	4	1
Kansas	Yes	4	2	Texas	....	4	2
Maryland	....	4	2†	Utah	Yes	2	2
Michigan*	....	4	2	Vermont	Yes	5	1
Minnesota	Yes	5	2†	Virginia	....	4	2†
Mississippi	Yes	2	2	West Virginia	Yes	2	2
Missouri	....	2	2	Wisconsin	....	2	2†
Nebraska	....	4	2				

* Have homeopathic departments.
† Similar requirements by licensing board.

In sixteen states no other medical schools exist, medical education in the state being entirely in charge of the state university.

An act of the Maryland legislature in 1914 created a Maryland State University and provided $15,000 per year for 1915 and 1916, to be used for medical education in the state. A feature in its development was the merger in 1915 between the University of Maryland School of Medicine and the College of Physicians and Surgeons of Baltimore.

Of the twenty-nine state medical schools, twenty-one give the complete medical course and grant degrees while eight give only the first two years of the medical course. California, Minnesota and Vermont require a five-year course, the fifth year to be spent by the student in a hospital as an intern, or in other recognized clinical work. The universities of Iowa, Michigan and Ohio have homeopathic departments.

All but four of these medical schools require or have announced the requirement of two years of college work for admission, the exceptions being those of Arkansas, Oregon,

Tennessee and Vermont. Of the twenty-five which have adopted the higher entrance standard eleven have the support of their state licensing boards which have adopted two years of college work as the minimum requirement of preliminary education. In some of the remaining states the licensing boards do not appear to be in sympathy with the higher requirement.

Hospital Intern Year

Six medical colleges have adopted the requirement of a fifth year to be spent by the student as an intern in an approved hospital or in other acceptable clinical work before the M.D. degree will be granted. These colleges and the sessions when the requirement became effective are as follows:

	Session of
University of Minnesota Medical School	1910-11
Leland Stanford Jr. University School of Medicine	1914-15
Rush Medical College (University of Chicago)	1914-15
University of California Medical School	1914-15
Northwestern University Medical School	1915-16
University of Vermont College of Medicine	1915-16

Four state licensing boards now require that every candidate to be eligible for license to practice medicine in those states must have served at least one year as an intern in an approved hospital. The requirement became effective in Pennsylvania in 1914, in New Jersey in 1916, and will become effective in Rhode Island in 1917 and in North Dakota in 1918.

Graduate Schools of Medicine.

Graduate schools have been organized in connection with six universities as follows:

University of Alabama Graduate School of Medicine	Birmingham
University of California Graduate School of Medicine	Los Angeles
Tulane University, The New Orleans Polyclinic	New Orleans
Harvard University Graduate School of Medicine	Boston
University of Minnesota Graduate School of Medicine	Minneapolis
University of Pennsylvania, The Medico-Chirurgical College	Philadelphia

Independent graduate (or postgraduate) medical schools which have been inspected by the Council on Medical Education are:

Chicago Policlinic	Chicago
Post-Graduate Medical School	Chicago
New York Post-Graduate Medical School	New York City
New York Policlinic Medical School	New York City
Manhattan Post Graduate School of Ophthalmology, Otology and Laryngology	New York City
School of Ophthalmology and Otology	New York City
Philadelphia Polyclinic	Philadelphia

Graduate Courses in Public Health

Graduate courses in public health have been established in connection with ten medical schools, the first of which was established at the University of Pennsylvania in 1909; the latest is that recently announced in connection with the Medical Department of Johns Hopkins University and the details of the course have not yet been published. Of the other nine the facts set forth in the accompanying table are interesting:

Seven of these schools give the degree of Doctor of Public Health (Dr. P. H.), three after a two-year course and four after a one-year course. The degree of Certified Sanitarian (C. S.), after a one-year course, is given by the University of Pennsylvania to graduates of colleges of arts and sciences. The degree of Master of Public Health (M. P. H.) is given after a one-year course by the Detroit College of Medicine and Surgery and the University of Wisconsin Medical School. The Master of Arts in Public Health (A.M.(P.H.)) or the Master of Science in Public Health (M.S.(P.H.)) is given by three institutions. The Master of Science in Sanitary Engineering is given after a one-year course by the University of Colorado to students who have received the degree of B.S. in engineering from that institution. Instead of the degree of public health, the University of California gives the degree of Graduate in Public Health (Gr.P.H.). The University of California offers three courses leading to the degree of Graduate in Public Health:

(a) A four-year course beginning with the junior college year and covering three additional years in the College of Letters and Science and one year in the Medical School.

(b) A two-year course, one year in the College of Letters and Science and one year in the Medical School, for graduates of the College of Civil Engineering who have completed the undergraduate curriculum in sanitary engineering.

(c) A course in one and one-half years, one year in the College of Letters and Science and one-half year in the Medical School, for students who have completed three and one-half years of the medical curriculum. The completion of this course gives the degrees of M.D. and Graduate in Public Health.*

Altogether 68 degrees in public health were granted, including 52 Graduates or Doctors of Public Health and 16 Masters of Arts in Public Health, Masters of Science in Public Health, Masters of Public Health and Certified Sanitarians. Certificates of Public Health were issued to 15 individuals after a one-year course. The total number of certificates issued on a course less than one year has not been recorded.

THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

The requirements for admission to and graduation from colleges holding membership in this association are as follows:

SECTION 1.—Every college holding membership in this Association shall, on and after Jan. 1, 1914, require for matriculation a completed or unconditioned medical student's certificate, to be granted by a state medical examining and licensing board, or a board empowered by statute to grant such certificates, or a certificate of entrance to the academic department of any state university, or a certificate of entrance to an accredited university or college, providing that said certificate is granted on no less than the following requirements:

(a) A diploma and transcript of record from a fully accredited high school, normal school or academy requiring for admission evidence

GRADUATE COURSES IN PUBLIC HEALTH

Name of College	Degrees in Health	Course Began	Years in Course	Instruction	Total Fees, Dollars	Thesis Required	Prerequisite College Work Required	Total No. of Degrees Granted
University of California Medical School	Cert. P.H.	1914	1	30	150	Yes	B.L., or B.S.	2
University of California Medical School	M.A. (P.H.)	1915	1	30	150	Yes	A.B., or B.S.	1
University of California Medical School	Gr. P.H.	1915	2	30	300	Yes	A.B., B.S., or M.D.	5
University of Colorado School of Medicine	Cert. P.H.	1913	*	20	...	....	M.D.	
University of Colorado School of Medicine	M.S. (San. Eng.)	1913	1	20	50	Yes	B.S. (Eng.)	
University of Colorado School of Medicine	M.S. (P.H.)	1913	1	20	50	Yes	A.B., or B.S.	1
University of Colorado School of Medicine	Dr. P.H.	1913	2	20	100	Yes	A.B., B.S., or M.D.	
Tulane University College of Medicine	Dr. P.H.	1912	1	16	265	Yes	M.D.	4
Tulane University College of Medicine	Cert. P.H.	1912	½	16	85	....	M.D.	(many)
Harvard University Medical School	Dr. P.H.	1910	1	50	150	Yes	A.B., and San. Eng., or M.D.	13
Harvard University Medical School	Cert. P.H.	1912	1	50	250	....	San. Eng. and M.D.	13
University of Michigan Medical School	M.S. (P.H.)	1913	1	7	67	Yes	A.B., B.S., or M.D.	6
University of Michigan Medical School	Dr. P.H.	1913	2	7	124	Yes	A.B., or B.S., and M.D.	2
Detroit College of Medicine and Surgery	M.P.H.	1913	1	11	80	....	M.D.	2
University and Bellevue Hospital Med. Coll.	Cert. P.H.	1914	6 wks.	35	50	....	M.D.	
University and Bellevue Hospital Med. Coll.	Dr. P.H.	1914	1	35	265	Yes	M.D.	
University of Pennsylvania School of Medicine	Dr. P.H.	1909	1	14	150	Yes	M.D.	26
University of Pennsylvania School of Medicine	C.S.	1909	1	14	150	....	A.B., or B.S.	2
University of Wisconsin Medical School	Dr. P.H.	1911	2	8	350	Yes	M.D.	2
University of Wisconsin Medical School	M.P.H.	1911	1	8	175	Yes	M.D.	4

* This is a course for practicing physicians covering six weeks in each of four years—a total of twenty-four weeks.
A new School of Public Health has just been established at Johns Hopkins University Medical Department; the details have not been published.

of the completion of a standard course in primary and intermediate grades, and for graduation, the completion of a standard four-year high school course, embracing two years (2 units) of mathematics, two years (2 units) of English, two years (2 units) of one foreign language, one year (1 unit) of history and civics, and seven years (7 units) of further credit in language, literature, history or science, making the total of units at least fourteen; and in addition, one year each of physics, chemistry, biology and French or German of college grade of each not less than eight semester hours.

(Note: A recommendation was endorsed by the Association, at its 1916 meeting, that on and after Jan. 1, 1918, two years of college work, including these required subjects, shall be the admission requirement. This recommendation will be voted on as an amendment at the 1917 annual meeting.)

(b) For the high school requirement an examination in the following branches totaling 14 units:

(A) Required, 7 units	Units
Mathematics (minimum 2 years, maximum 3 years), algebra and plane geometry	2
English (minimum 2 years, maximum 4 years)	2
One foreign language (minimum 2 years, maximum 4 years)	2
History and civics	1
Total number of required units	7

(B) Elective, 7 units.
To be selected from the following:

	Units
English language and literature (in addition to the required work)	1 to 2
Foreign languages, additional, Latin, German, Italian, French, Spanish or Greek (not less than 1 year in any one)	1 to 4
Advanced mathematics, advanced algebra, solid geometry and trigonometry (½ year each)	1
Natural science, chemistry 1 year, physics 1 year, and biology, botany, physiology and zoology (½ to 1 year each)	½ to 2
Earth science, physical geography, geology and agriculture (½ year to 1 year each)	½ to 1
Astronomy (½ year)	½
Drawing (½ to 1 year)	½ to 1
History, ancient, medieval and modern, and English (1 year each)	1 to 3
Economics (½ year)	½
Manual training (1 year)	1
Bookkeeping (½ to 1 year)	½ to 1

One unit in any subject is the equivalent of work in that subject for four or five periods per week for a year of at least thirty-six weeks, periods to be not less than forty-five minutes in length. One unit is equivalent to 2 semester credits or 2 points.

THE PRELIMINARY COLLEGE YEAR

(The requirements of the preliminary college year are the same as set forth in the standard of the Council on Medical Education on page 700. The standard was adopted April, 1915, by a joint committee representing the two organizations. After Jan. 1, 1917, the requirement in physics shall be 8 semester hours of college work, of which at least two are laboratory, or 96 hours of didactic plus 64 hours of laboratory, in periods of not less than two hours each.)

Sec. 2.—The examination of credentials must be conducted by and under the authority of the board of medical examiners of the state in which the college is located, or by a duly authorized examiner of the college entrance examination board, or the authorized examiner of an accredited university, state or otherwise, or by an examiner whose certificates are accepted by accredited colleges or universities, or by a method approved by the judicial council of this association.

Sec. 3.—The term "accredited" as applied to high schools, academies, colleges and universities means institutions of that type that have been investigated and are accredited by the state university of their respective states, by the North Central Association of Colleges and Secondary Schools, the Association of Colleges and Preparatory Schools of the Southern States, the Association of Colleges and Preparatory Schools of the Middle States and Maryland, the New England College Entrance Certificate Board, the Association of American Universities and the Association of State Universities, provided that such accrediting is based on Article III, Section 1, of this constitution.

Sec. 4.—Colleges in membership in this Association may honor the official credentials presented by students from other colleges having the standard requirements maintained by members of this Association, excepting for the last fourth year of the course, but no member of this Association shall admit a student to advanced standing without receiving from the dean, secretary or registrar of such college a direct written communication certifying to the applicant's standing. Credit for time or scholarship cannot be given beyond that of the college issuing credentials, except by mutual agreement between the colleges.

Sec. 5.—Candidates for the degree of Doctor of Medicine shall have attended four courses of study in four calendar years, each annual course to have been of not less than thirty-two teaching weeks' duration, and at least ten months shall intervene between the beginning of any course and the beginning of the preceding course.

Sec. 6.—No time credit shall be given to holders of a Bachelor's degree, but subject credit may be given on satisfactory examination. Four years of residence in a medical college shall be required of all candidates for the degree of Doctor of Medicine.

Sec. 7.—A college which gives less than a four years' course of study, but does not graduate students, and is possessed of other required qualifications, may be admitted to membership.

Sec. 8.—Each student shall be obliged to attend not less than 80 per cent. of the exercises in every annual course of study for which he seeks credit. No student shall be given credit on examination unless he attains a grade of at least 70 per cent. or its equivalent in any other marking system. And no student shall be graduated unless he shall have attained a passing grade in each and all subjects of the required curriculum.

CURRICULUM

Section 1.—The entire course of four years shall consist of at least 4,000 hours for each student, and shall be grouped in divisions and subdivided into subjects; each division and subject to be allotted the number of hours as shown in the following schedule:

Division 1.—Anatomy, 720 Hours (18 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) Gross anatomy (including applied anatomy)	510		120		390
(b) Histologic and microscopic anatomy	135		30		105
(c) Embryology	75		30		45

Division 2.—Physiology and Chemistry, 600 Hours (15 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) Inorganic chemistry	180		60		120
(b) Organic chemistry	75		30		45
(c) Physiologic chemistry	104		30		75
(d) Physiology	240		140		100

Division 3.—Pathology, Bacteriology and Hygiene, 450 Hours (11.25 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) Bacteriology	135		30		105
(b) Hygiene and general dietetics	45		45		...
(c) Pathology	270		60		210

Division 4.—Pharmacology, Materia Medica and Therapeutics, 240 Hours (6 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) Pharmacology	105		40		65
(b) Materia medica and pharmacology	80		...		...
(c) Therapeutics	55		...		...

Division 5.—Medicine and Medical Specialties, 970 Hours (24.25 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) General medicine (including clinical microscopy)	640		...		...
(b) Pediatrics	150		...		...
(c) Nervous and mental diseases	105		...		...
(d) Jurisprudence, ethics and economics	30		...		...
(e) Dermatology and syphilis	45		...		...

Division 6.—Surgery and Surgical Specialties, 720 Hours (18 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) General surgery	510		...		...
(b) Orthopedic surgery	45		...		...
(c) Genito-urinary diseases	45		...		...
(d) Eye	60		...		...
(e) Ear, nose and throat	60		...		...

Division 7.—Obstetrics and Gynecology, 300 Hours (7.5 per Cent.)

	Hours.	Lect.	Rec.	Dem.	Lab. Wk.
(a) Obstetrics	195		...		...
(b) Gynecology (including some abdominal surgery)	105		...		...

Colleges may reduce the number of hours in any subject not more than 20 per cent. provided that the total number of hours in a division is not reduced. Where the teaching conditions in a college are best subserved, the subject may be, for teaching purposes, transferred from one division to another. When didactic and laboratory hours are specified in any subject, laboratory hours may be substituted for didactic hours.

(Note.—At the 1916 meeting the Committee on Education and Pedagogics was instructed to revise this curriculum to meet the present requirements.)

Sec. 2.—Each medical college in membership in the Association shall print in every annual catalogue or announcement a table of the total number of hours' work given in said college, arranged both by subjects and years.

Sec. 3.—Each college in membership in this Association shall print annually a list of its students by classes.

MEMBERS OF ASSOCIATION

University of Alabama, School of Medicine.
Leland Stanford Junior University, School of Medicine.
University of California Medical School.
University of Southern California, Medical Department.
University of Colorado, School of Medicine.
Yale University, School of Medicine.
Georgetown University, School of Medicine.
George Washington University Medical School.
Howard University, School of Medicine.
University of Georgia, Medical Department.
Northwestern University Medical School.
Rush Medical College.
University of Illinois, College of Medicine.
Indiana University, School of Medicine.
State University of Iowa, College of Medicine.
University of Kansas, School of Medicine.
University of Louisville, Medical Department.
Tulane University of Louisiana, School of Medicine.

College of Physicians and Surgeons, Baltimore.
Johns Hopkins University, Medical Department.
University of Maryland, School of Medicine.
Medical School of Harvard University.
Tufts College Medical School.
Detroit College of Medicine and Surgery.
University of Michigan Medical School.
University of Minnesota Medical School.
University of Mississippi, Department of Medicine.
St. Louis University, School of Medicine.
University of Missouri, School of Medicine.
Washington University Medical School.
John A. Creighton Medical College.
University of Nebraska, College of Medicine.
Columbia University, College of Physicians and Surgeons.
Cornell University Medical College.
Syracuse University, College of Medicine.
University and Bellevue Hospital Medical College.
University of Buffalo, Medical Department.
University of North Carolina, School of Medicine.
Wake Forest College, School of Medicine.
University of North Dakota, School of Medicine.
University of Cincinnati, College of Medicine.
Ohio State University, College of Medicine.
Western Reserve University, School of Medicine.
University of Oklahoma, School of Medicine.
Hahnemann Medical College and Hospital of Philadelphia.
University of Pennsylvania, School of Medicine.
University of Pittsburgh, School of Medicine.
University of the Philippines College of Medicine and Surgery.
Medical College of the State of South Carolina.
Meharry Medical College (Affiliated Member).
University of Tennessee, College of Medicine.
Vanderbilt University, Department of Medicine.
University of Texas, Department of Medicine.
University of Vermont, College of Medicine.
Medical College of Virginia.
Marquette University School of Medicine.
University of Wisconsin Medical School.

The secretary-treasurer of the Association is Dr. Fred C. Zapffe, 3431 Lexington Street, Chicago.

DESCRIPTION OF MEDICAL COLLEGES

Below are given brief descriptions of the medical colleges in the United States and Canada that are legally chartered to teach medicine, several of which do not grant degrees. The name, address, year of organization, history and date when first class graduated are given in each instance. Unless otherwise stated, a class graduated each subsequent year. Where official reports have been received from the college, information regarding faculty, entrance requirements, length of term, fees, students (excluding specials and postgraduates), graduates, name of dean and next session is given without discrimination, regardless as to whether the college is sectarian or not. In a few instances in which such reports were not received the information published is from other reliable sources. Figures for graduates include all who graduated since July 1, 1915. Extracts of rules and the membership of the Association of American Medical Colleges are shown following the list of colleges. Figures showing population of cities and states are taken from the United States Census Bureau's estimate for 1915. Statements have been added showing the preliminary requirements held by state licensing boards where those requirements include one or two years of collegiate work. Four states, New Jersey, North Dakota, Pennsylvania and Rhode Island require a year's hospital internship before a license will be granted.

ALABAMA

Alabama, population 2,301,277, has one medical college, the School of Medicine of the University of Alabama, located in Mobile, a city with a population of 56,536.

In order to secure licenses to practice medicine in Alabama, students matriculating in the session of 1915-16 and thereafter, must have completed *two years* of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language, prior to entering on the study of medicine.

Mobile

UNIVERSITY OF ALABAMA SCHOOL OF MEDICINE, St. Anthony and Lawrence Streets.—Organized in 1859 as the Medical College of Alabama. Classes were graduated in 1861 and in all subsequent years except 1862 to 1868 inclusive. It was reorganized as the Medical Department of the University of Alabama in 1897. All property was transferred to the University of Alabama in 1907, when the present title was assumed. Two years of college work are required for admission. The faculty consists of 15 professors and 27 lecturers and assistants, a total of 42. The course of study covers four years of thirty-two weeks each. The total fees for each of the four years, respectively, are $160, $155, $155 and $175. The Dean is Dr. T. H. Frazer. The total registration for 1915-16 was 56; graduates, 18. The fifty-first session begins Oct. 5, 1916, and ends June 5, 1917.

ARKANSAS

Arkansas, population 1,713,102, has one medical college, the Medical Department of the University of Arkansas, located in Little Rock, a city of 55,158.

To secure licenses to practice medicine in Arkansas, students matriculating in the session of 1915-16 and thereafter must have completed at least one year of collegiate work including college courses in physics, chemistry, biology and a modern language before beginning the study of medicine. This applies to all graduates of 1919 and thereafter.

Little Rock

UNIVERSITY OF ARKANSAS MEDICAL DEPARTMENT, Markham and Center Streets.—Organized in 1879 as the Medical Department of Arkansas Industrial University. It assumed the present title in 1899. In 1911 the College of Physicians and Surgeons united with it and the new school was made an integral part of the University of Arkansas. The first class was graduated in 1880. The faculty consists of 15 professors and 48 lecturers and assistants, total 63. Entrance requirements are a year of collegiate work beyond a four-year high school course. The course of study covers four years of thirty-two weeks each. The fees are $125 for each of the first three years and $150 for the fourth year. The Dean is Dr. Morgan Smith. Total registration 1915-16 was 56; graduates, 16. The thirty-eighth session begins Sept. 18, 1916, and ends May 31, 1917.

CALIFORNIA

California, population 2,848,275, has seven medical colleges. Three are located in San Francisco, a city of 448,502 inhabitants. They are Leland Stanford Junior University School of Medicine, College of Medicine of the University of California, the College of Physicians and Surgeons and the Hahnemann Medical College of the Pacific. The College of Physicians and Surgeons, Medical Department of the University of Southern California is situated in Los Angeles, population 465,367. The Oakland College of Medicine and Surgery is in Oakland, population 190,803. The College of Medical Evangelists is located at Loma Linda, a village of 110 people.

To secure licenses to practice medicine in California under the "physician's and surgeon's" certificate, students matriculating in medical colleges in and after the session of 1915-16, prior to such matriculation, must have completed at least one year of recognized collegiate work including college courses in physics, chemistry, biology and a modern language. This applies to all graduates of 1919 and thereafter.

Berkeley-San Francisco

UNIVERSITY OF CALIFORNIA MEDICAL SCHOOL, University Campus, Berkeley; Second and Parnassus Avenues, San Francisco.—Organized in 1863 as the Toland Medical College. The first class graduated in 1865. In 1872 it became the Medical Department of the University of California. In 1909 the College of Medicine of the University of Southern California, at Los Angeles, by legislative enactment, became a clinical department. This Los Angeles portion was changed to a graduate school in 1914. In 1915 the Hahnemann Medical College of the Pacific was merged and elective chairs in homeopathic materia medica and therapeutics were provided for. *Two years* of collegiate work are required for admission. The work of the first year and a half is given at Berkeley and the work of the last two and a half years at San Francisco. The faculty is composed of 31 professors and 99 associates and assistants, a total of 130. The course covers five years of nine months each, the fifth year to consist of an internship or of special work in a department of the medical school. Fees for the four years, respectively, are $190, $190, $167 and $167. The Dean is Dr. Herbert C. Moffitt, San Francisco. Total registration for 1915-16 was 124, graduates, 29. The forty-fourth session begins Aug. 18, 1916, and ends May 16, 1917.

Loma Linda-Los Angeles

COLLEGE OF MEDICAL EVANGELISTS.—Organized in 1909. The faculty numbers 55. The first class graduated in 1914. The course extends over four years of nine months each. *Two years* of college work are required for admission. The total fees each year are $136; matriculation fee, $5, payable but once; graduation fee, $10. President is Dr. Newton Evans. The total registration for 1915-16 was 51; graduates, 9. The eighth session begins Sept. 11, 1916, and ends May 31, 1917.

Los Angeles

COLLEGE OF PHYSICIANS AND SURGEONS, MEDICAL DEPARTMENT OF THE UNIVERSITY OF SOUTHERN CALIFORNIA, 516 East Washington Street.—Organized in 1903, first class graduated in 1905; became Medical Department, University of Southern California, Aug. 11, 1909. The course covers four years of nine months each. *Two years* of collegiate work are required for admission. The faculty consists of 22 professors and 74 associate professors, lecturers and instructors, a total of 96. The fees for the four years, respectively, are $220, $217, $202 and $227. The

Dean is Dr. Charles W. Bryson. The registration for 1915-16 was 143; graduates, 23. The next session begins Sept. 5, 1916, and ends June 7, 1917.

Oakland

OAKLAND COLLEGE OF MEDICINE AND SURGERY, Thirty-First and Grove Streets.—Organized in 1900, opened in 1902. The first class graduated in 1906. The faculty numbers 45. The course covers four years of nine months each, and the classes are limited to ten students each. The total fees for each of the four years, respectively, are $195, $190, $150 and $150. The Registrar is Dr. Edward N. Ewer. The total registration for 1915-16 was 13; graduates, 2. The fifteenth session begins Aug. 21, 1916, and ends June 1, 1917.

San Francisco

COLLEGE OF PHYSICIANS AND SURGEONS, 344 Fourteenth Street.—Organized in 1896. The first class graduated in 1897. The faculty numbers 28. The course covers four years of nine months each. The fees for each of the four years, respectively, are $165, $160, $160 and $185. The Dean is Dr. L. W. Spriggs. Registration for 1915-16 was 63; graduates, 9. The twentieth session begins Sept. 4, 1916, and ends June 7, 1917. *Reported not recognized by licensing boards of thirty-three states.*

San Francisco-Palo Alto

LELAND STANFORD JUNIOR UNIVERSITY SCHOOL OF MEDICINE, University Campus, Palo Alto, and Sacramento and Webster Streets, San Francisco.—Organized in 1908 when, by an agreement, the interests of Cooper Medical College were taken over. The faculty consists of 46 professors and 52 lecturers, assistants, etc., a total of 98. Three years of collegiate work are required for admission. The course covers five years of nine months each, including a year of practical or intern work. The total fees for the first four years, respectively, are $160, $155, $150 and $150. The Dean is Dr. W. Ophüls, San Francisco. The total registration for 1915-16 was 96; graduates, 24. The seventh session begins Aug. 30, 1916, and ends May 16, 1917.

COLORADO

Colorado, with a population of 935,799, has one medical college, the University of Colorado School of Medicine. The first two years of the course are given at Boulder, the seat of the university, while the last two, or clinical years, are given in Denver, which has a population of 253,161.

The Colorado State Board of Medical Examiners will register without further examination graduates of medical colleges in good standing who present licenses issued after examination by any other licensing board. The law permits any one, graduate or non-graduate, to try the Board's written examination. No graduate of 1914 or thereafter is eligible to obtain a license in Colorado, on indorsement of his credentials, unless he graduated from a medical college which, at the time he matriculated, required at least *two years'* study, without conditions, in an accredited college of liberal arts, and this work must have included courses in physics, chemistry, biology and one modern language.

Boulder-Denver

UNIVERSITY OF COLORADO SCHOOL OF MEDICINE—Organized in 1883. Classes were graduated in 1885 and in all subsequent years except 1898 and 1899. Denver and Gross College of Medicine was merged Jan. 1, 1911, when the legal right to teach the last two or clinical years in Denver was secured. The faculty embraces 56 professors and 30 lecturers and assistants, a total of 86. The work embraces a graded course of four years of nine months each. The entrance requirements are *two years* of college work counting toward a degree in arts in an accredited college or university. The tuition is $75 per year for residents of Colorado, $100 for non-residents. There are laboratory fees of $10 for each of the first two years. The Dean is Dr. Charles N. Meader. The total registration for 1915-16 was 79; graduates, 13. The thirty-fifth session begins Sept. 11, 1916, and ends June 6, 1917.

CONNECTICUT

Connecticut, with a population of 1,223,583, has one medical college, Yale University, School of Medicine, located in New Haven, population 147,095.

Candidates for license to practice medicine in Connecticut, who graduate in 1914 or thereafter are not eligible unless, prior to entering on the study of medicine they had completed, in addition to an accredited four-year high school education, at least nine months of collegiate work including college courses in physics, chemistry and general biology.

New Haven

YALE UNIVERSITY SCHOOL OF MEDICINE, 150 York Street and Congress Avenue and Cedar Street.—Chartered in 1810 as the Medical Institution of Yale College. Organized in 1812; instruction began in 1813; first class graduated in 1814. A new charter in 1879 changed the name to the Medical Department of Yale College. In 1884, the Connecticut Medical Society surrendered such authority as had been granted by the first charter. In 1887, Yale College became Yale University. The faculty consists of 24 professors and 50 lecturers and assistants, a total of 74. The requirements for admission is *two full years* of collegiate work plus evidence of satisfactory completion of courses in general physics, general inorganic chemistry, general biology, organic chemistry and physical chemistry or laboratory physics, all reasonably equivalent to the courses in these subjects in Yale University. The student also must have a reading knowledge of German. The course covers four years of nine months each. The fees for the four years, respectively, are approximately $195, $165, $150 and $163. The Dean is Dr. George Blumer. The total registration for 1915-16 was 58; graduates, 6. The one hundred and fourth session begins Sept. 28, 1916, and ends June 20, 1917.

DISTRICT OF COLUMBIA

The District of Columbia, population 358,679, has three medical colleges; George Washington University Medical School, Georgetown University, School of Medicine and Howard University, School of Medicine.

Washington

GEORGE WASHINGTON UNIVERSITY MEDICAL SCHOOL, 1325 H Street, N.-W.—Organized in 1825 as the Medical Department of Columbian College. Also authorized to use the name, National Medical College. Classes were graduated in 1826 and in all subsequent years, except 1834 to 1838, and 1861 to 1863, inclusive. The original title was changed to Medical Department of Columbian University in 1873. In 1903 it absorbed the National University Medical Department. In 1904, by an act of Congress, the title of George Washington University was granted to the institution. The faculty is composed of 23 professors and 62 instructors, demonstrators and assistants, a total of 85. One year of collegiate work is required for admission. The course covers four years of thirty-two weeks each. The total fees for the four years, respectively, are $168, $169, $163 and $163. The Dean is Dr. William C. Borden. The total registration for 1915-16 was 141; graduates, 27. The ninety-fifth session begins Sept. 27, 1916, and ends June 6, 1917.

GEORGETOWN UNIVERSITY SCHOOL OF MEDICINE, 920 H Street, N.-W.—Organized in 1851. The first class graduated in 1852. The faculty contains 24 professors, 67 instructors and assistants; total, 91. *Two years* of collegiate work are required for entrance. The course of study covers four terms of eight and one-half months each. The fees for the first year are $165, and for each of the other three years, $150. The Dean is Dr. George M. Kober. The registration for 1915-16 was 53; graduates, 7. The sixty-sixth session begins Sept. 24, 1916, and ends June 13, 1917.

HOWARD UNIVERSITY SCHOOL OF MEDICINE, Fifth and W. Streets, N.-W.—Chartered in 1867. Organized in 1869. The first class graduated in 1871. Colored students compose a majority of those in attendance. The faculty comprises 18 professors and 21 lecturers and assistants, 39 in all. The admission requirements are *two years* of collegiate work, including physics, chemistry, botany and zoology and a reading knowledge of one modern language besides English. The course covers four years of thirty-two weeks each. The fees of each of the four sessions, respectively, are $137, $127, $127 and $134. The Dean is Dr. Edward A. Balloch. Registration for 1915-16 was 100; graduates, 15. The forty-ninth session begins Oct. 2, 1916, and ends June 6, 1917.

GEORGIA

Georgia, population 2,816,289, has two medical colleges; University of Georgia, Medical Department, located in Augusta, population 49,848, and the Atlanta Medical College in Atlanta, a city of 184,873 population.

Atlanta

ATLANTA MEDICAL COLLEGE, MEDICAL DEPARTMENT OF EMORY UNIVERSITY, Butler and Armstrong Streets.—Organized in 1854. Classes graduated 1855 to 1861, when it suspended. Reorganized in 1865. Class graduated in 1865 and each subsequent year except 1874. In 1898 it merged with the Southern Medical College (organized in 1878), taking the name of Atlanta College of Physicians and Surgeons. In 1913 it merged with the Atlanta School of Medicine (organized in 1905), reassuming its first title. Became the Medical Department of Emory University in 1915. One year of collegiate work is required for entrance; two years will be required for the session of 1918-19 and thereafter. It has a faculty of 31 professors and 70 instructors, assistants, etc., a total of 101. The course of study is four years of thirty-two weeks each. The fees are $150 each year. The Dean is Dr. W. S. Elkin. Total registration for 1915-16 was *232*; graduates, 101. The next session begins Sept. 25, 1916, and ends May 30, 1917.

Augusta

UNIVERSITY OF GEORGIA, MEDICAL DEPARTMENT, University Place.—Organized in 1828 as the Medical Academy of Georgia, the name being changed to the Medical College of Georgia in 1829. Since 1873 it has been known as the Medical Department of the University of Georgia. Entire property transferred to the University in 1911. Classes were graduated in 1833 and in all subsequent years except 1862 and 1863. The faculty includes 18 professors and 30 assistants, 48 in all. One year of collegiate work is required for entrance; two years will be required for the session of 1918-19 and thereafter. The course is four years of thirty-four weeks each. Fees are $150 each year for non-residents of Georgia; for residents the fees for the four years respectively are $55, $50, $55 and $60. The Dean is Dr. W. H. Doughty, Jr. The total registration for 1915-16 was 54; graduates, 10. The eighty-fifth session begins Sept. 14, 1916, and ends May 30, 1917.

ILLINOIS

Illinois, population 6,069,519, has eight medical colleges, two of which give instruction at night, all located in Chicago, a city of 2,447,045 inhabitants, and are as follows: Rush Medical College, Northwestern University Medical School, University of Illinois College of Medicine, Hahnemann Medical College and Hospital, Loyola University School of Medicine, Chicago College of Medicine and Surgery, Jenner Medical College and the Chicago Hospital College of Medicine.

To be eligible for license to practice medicine in Illinois, students matriculating in the session of 1915-16 and thereafter, in addition to an accredited four-year high school education, must have completed at least a year of collegiate work including courses in physics, chemistry, biology and a modern language, to be taken either in a preliminary year given by a recognized medical college, or in an approved college of liberal arts.

Chicago

RUSH MEDICAL COLLEGE.—This school was founded in 1837, organized in 1843, was the medical department of Lake Forest University from 1887 until 1898, when it became affiliated with the University of Chicago. The first class graduated in 1844. The faculty is composed of 108 professors, 193 associates, instructors, etc., a total of 301. The requirements for admission are *two years* of college work, including courses in college chemistry, physics and biology, and a reading knowledge of German or French. Classes are limited to 100 students in each of the freshman and sophomore classes, and to 120 students in each of the clinical years. No application for admission is accepted after September 1. The course covers four years of eight and a half months each, and a fifth year, consisting of a hospital internship or of a fellowship in one of the departments. All freshmen and sophomore studies are given at the University of Chicago. The clinical years are given in the building at the corner of Wood and Harrison Streets. The tuition fees are $180 each year. A matriculation fee of $5 is paid but once, and there are incidentals amounting from $3 to $10 annually. The Dean is Dr. John M. Dodson. Total registration, 1914-15 was 402; graduates, 97. The seventy-third session begins Oct. 1, 1915, and ends June 17, 1916.

NORTHWESTERN UNIVERSITY MEDICAL SCHOOL, 2431 South Dearborn Street.—Organized in 1859 as the Medical Department of Lind University. First class graduated in 1860. In 1864 it became independent as the Chicago Medical College. It united with Northwestern University in 1869, but retained the name of Chicago Medical College until 1891, when the present name was taken. Became an integral part of Northwestern University in 1905. The faculty comprises 54 professors and 70 lecturers and assistants, a total of 124. The requirements for admission are such as will admit to the College of Arts of Northwestern University plus *two years* of college work, including courses in physics, chemistry, biology and a modern language. The course covers four years of eight months each. The fees for the four years, respectively, are $190, $195, $190 and $206. The Dean is Dr. Arthur R. Edwards. The total registration for 1915-16 was 236; graduates, 42. The fifty-seventh session begins Oct. 3, 1916, and ends June 2, 1917.

UNIVERSITY OF ILLINOIS COLLEGE OF MEDICINE, Honore and Congress Streets.—Organized in 1882 as the College of Physicians and Surgeons. The first class graduated in 1883. It became the Medical Department of the University of Illinois by affiliation in 1897 and an integral part in 1910. The relationship with the university was canceled in June, 1912, but restored in March, 1913, when the present title was assumed. The American Medical Missionary College was absorbed in 1910. *Two years* of collegiate work are required for admission. The faculty is composed of 55 professors, 90 assistants and instructors, a total of 145. The total fees for the four years, respectively, are $155, $160, $150 and $165. The Dean is Dr. D. A. K. Steele. Total registration for 1915-16 was 227; graduates, 110. The thirty-fifth session begins Sept. 28, 1916, and ends June 13, 1917.

CHICAGO COLLEGE OF MEDICINE AND SURGERY, 706 South Lincoln Street.—Organized in 1901 as the American College of Medicine and Surgery (Chicago Eclectic Medical College). The latter part of the name was dropped in 1902 and it became the Medical Department of Valparaiso University. Eclecticism was dropped in 1905 and the name was changed to that above in 1907. One year of collegiate work, including courses in physics, chemistry, biology and a modern language is required for admission. The course covers four years of eight months each. The faculty numbers 167. The total fees of each of the four years are $155. The Secretary is Dr. C. E. Wyneken. The total registration for 1915-16 was 488; graduates, 194. The sixteenth session begins Sept. 26, 1916, and ends May 27, 1917.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF CHICAGO, 2811 Cottage Grove Avenue.—Organized in 1859. The first class was graduated in 1861. Absorbed the Chicago Homeopathic Medical College in 1904. The faculty includes 57 professors and 26 lecturers, assistants, etc., a total of 83. One year of collegiate work, including courses in physics, chemistry and biology and a modern language is required for admission. *Two years* of collegiate work will be required in the session of 1918-19 and thereafter. The course extends over four years of eight months each. The tuition fees for the four years, respectively, are $171, $161.50, $176.50 and $191.50. The Dean is Dr. Joseph P. Cobb. The total registration for 1915-16 was 85; graduates 18. The fifty-seventh session begins Sept. 25, 1916, and ends June 7, 1917.

LOYOLA UNIVERSITY SCHOOL OF MEDICINE, Fulton and Ada Streets.—Organized in 1868 as the Bennett College of Eclectic Medicine and Surgery. Dropped Eclecticism and became Bennett Medical College in 1909. In 1910 it absorbed the Illinois Medical College. The first class graduated in 1870. Became an integral part of Loyola University in 1915. Present title in 1916. The faculty numbers 85. The course covers four years of thirty-two weeks each. One year of collegiate work required for admission, including courses in physics, chemistry and biology. The fees are $150 each year. The Secretary is Dr. Alfred de Roulet. The total registration for 1915-16 was 308; graduates, 142. The next session begins Sept. 25, 1916, and ends June 18, 1917.

JENNER MEDICAL COLLEGE, an afternoon and night school, located at 701 South Wood Street.—Organized in 1892. Classes were graduated in 1896 and in all subsequent years. Total registration for 1915-16 was 98; graduates, 15. *Reported not recognized by the licensing boards of thirty-two states.*

CHICAGO HOSPITAL COLLEGE OF MEDICINE, another afternoon and night school, located at 3832 Rhodes Avenue.—Organized in 1911; chartered in 1912. Claimed to have had a registration of about 60 in 1914-15. There were 9 graduates. *Official reports indicate that the diplomas from this college are not recognized by the licensing boards of thirty-two states.*

INDIANA

Indiana, population 2,798,142, has one medical college, the Indiana University School of Medicine, located at Indianapolis, a city of 265,578 people, except that the work of the first year is offered also at Bloomington, the seat of the University.

Candidates for license to practice medicine in Indiana who matriculated between Jan. 11, 1910, and Jan. 1, 1911, must have completed one year of collegiate work, in addition to an accredited four-year high school course, prior to beginning the study of medicine. Those matriculating subsequent to Jan. 1, 1911, must have completed *two years* of work in a recognized college of liberal arts.

Bloomington and Indianapolis

INDIANA UNIVERSITY SCHOOL OF MEDICINE.—Organized in 1903, but did not give all of the work of the first two years of the medical course until 1905. In 1907, by union with the State College of Physicians and Surgeons, the complete course in medicine was offered. In 1908 the Indiana Medical College, which was formed in 1905 by the merger of the Medical College of Indiana (organized in 1878), the Central College of Physicians and Surgeons (organized in 1879), and the Fort Wayne College of Medicine (organized in 1879) merged into it. The first class was graduated in 1908. The faculty consists of 74 professors and 63 lecturers, associates and assistants, a total of 137. *Two years* of collegiate work are required for admission. The work of the first year is emphasized only at Bloomington. The work of the other three years is all at Indianapolis. The fees for the four years, respectively, are $100, $100, $130 and $130. A fifth optional year leading to the "M.D. cum laude" has been added. The Secretary at Bloomington is Dr. B. D. Myers; the Dean is Dr. Charles P. Emerson, Indianapolis. The total registration for 1915-16 was 156; graduates, 34. The next session begins Sept. 18, 1916, and ends June 13, 1917.

IOWA

Iowa, population 2,221,038, has two medical colleges. The College of Medicine and the College of Homeopathic Medicine of the State University of Iowa, both located in Iowa City, population 11,200.

Candidates for license to practice medicine in Iowa who graduate subsequent to Jan. 1, 1915, must have completed *two years* of work in an approved college of liberal arts prior to beginning the study of medicine, this preliminary college work to have included courses in physics, chemistry, biology and a foreign language.

Iowa City

STATE UNIVERSITY OF IOWA COLLEGE OF MEDICINE. University Campus.—Organized in 1869. First session began in 1870. First class graduated in 1871. Absorbed Drake University College of Medicine in 1913. The faculty is made up of 27 professors, 27 lecturers, demonstrators and assistants, a total of 54. *Two years* of collegiate work, including courses in physics, chemistry, biology and French or German, are required for admission. The course of study covers four years of thirty-six weeks each. The tuition fee for residents of Iowa is $85 per year and for nonresidents $100, plus a matriculation fee of $10 and a graduation fee of $10. The Dean is Dr. Lee Wallace Dean, Iowa City. Total registration for 1915-16 was 151; graduates, 29. The forty-seventh session begins Sept. 18, 1916, and ends June 13, 1917.

STATE UNIVERSITY OF IOWA COLLEGE OF HOMEOPATHIC MEDICINE.—Organized in 1877. The first class graduated in 1878. Class each subsequent year except 1914. The faculty is composed of 15 professors and 12 lecturers and assistants, a total of 27. The work of the first two years is taken in classes with the students of the College of Medicine of the State University of Iowa, and it has the same entrance requirements. The fees are $100 each year for nonresidents of Iowa and $85 for residents, plus a matriculation fee of $10, paid but once, and a graduation fee of $10. The Dean is Dr. George Royal. Total registration for 1915-16 was 10; graduates, 0. The thirty-ninth session begins Sept. 18, 1916, and ends June 13, 1917.

KANSAS

Population 1,807,221, has one medical college. The School of Medicine of the University of Kansas gives its first two years in Lawrence, population 12,915, and the last two years in Rosedale, a suburb of the two Kansas Cities, which together have a population of 392,693.

Candidates for license to practice medicine in Kansas who matriculated in the session of 1910-11 and thereafter must present credentials showing that they matriculated in and graduated from a medical college which required for admission at least one year of collegiate work including college courses in physics, chemistry and biology in addition to an accredited four-year high school course. This applies to graduates of 1914 and thereafter.

Lawrence and Rosedale

UNIVERSITY OF KANSAS SCHOOL OF MEDICINE.—Organized in 1880. It offered only the first two years of the medical course until in 1905, when it merged with the Kansas City (Mo.) Medical College, founded in 1869, the College of Physicians and Surgeons, founded in 1894, and

the Medico-Chirurgical College, founded in 1897. First class graduated in 1906. The clinical courses are given at Rosedale. Absorbed Kansas Medical College in 1913. The faculty, including lecturers and clinical assistant, numbers 61. The requirements for admission are *two years* of collegiate work. The course covers four years of nine months each. The total fees are for each of the first two years, $30 per year (and for nonresidents of the state, $45); for the last two years $100 and $105, respectively. The Dean is Dr. S. J. Crumbine; Associate Dean, Dr. M. T. Sudler. The total registration for 1915-16 was 105; graduates, 11. The thirty-seventh session begins Sept. 14, 1916, and ends June 6, 1917.

KENTUCKY

Kentucky, population 2,365,185, has one medical college, the University of Louisville Medical Department, situated in Louisville, a city of 237,012 inhabitants.

To be eligible for license to practice medicine in Kentucky all students matriculating in and after the session of 1914-15 must have completed, in addition to an accredited four-year high school course, at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and a modern language.

Louisville

UNIVERSITY OF LOUISVILLE MEDICAL DEPARTMENT, First and Chestnut Streets.—Organized in 1837 as the Louisville Medical Institute. The first class graduated in 1838, and a class graduated in each subsequent year except in 1863. In 1846 the present name was assumed. In 1907 it absorbed the Kentucky University Medical Department. In 1908 it absorbed the Louisville Medical College, the Hospital College of Medicine and the Kentucky School of Medicine. One year of collegiate work is required for admission. It has a faculty of 34 professors and 68 lecturers and assistants, a total of 102. The course covers four years of thirty-two weeks each. The fees are $175 each year; graduation fee, $10. The Dean is Dr. Henry Enos Tuley. The total registration for 1915-16 was 149; graduates, 54. The next session begins Sept. 26, 1916, and ends June 7, 1917.

LOUISIANA

Louisiana, having a population of 1,801,306, contains one medical college, the School of Medicine of the Tulane University of Louisiana, situated in New Orleans, a city of 366,484.

Candidates for license to practice medicine in Louisiana who graduate in 1919 and thereafter must present evidence that they had successfully completed, at an approved college or university at least one year of work including biology, physics, chemistry and a modern language, before entering on the study of medicine. This applies to all students who matriculated in 1915 and thereafter.

New Orleans

TULANE UNIVERSITY OF LOUISIANA SCHOOL OF MEDICINE, University Campus and 1551 Canal Street.—Organized in 1834 as the Medical College of Louisiana. Classes were graduated in 1835 and in all subsequent years, except 1863-65, inclusive. It was transferred to the Medical Department of the University of Louisiana in 1847 and became the Medical Department of the Tulane University of Louisiana in 1884. Present name in 1913, when it became the School of Medicine of the College of Medicine of the Tulane University of Louisiana. The faculty has 24 professors and 89 assistant professors, instructors, demonstrators, etc., a total of 113. The course covers four years of thirty-two weeks each. One year of collegiate work is required for admission. Total fees are $185 per year; graduation fee, $30. The Dean is Dr. Isadore Dyer. The total registration for 1915-16 was 265; graduates, 75. The eighty-second session begins Sept. 25, 1916, and ends June 6, 1917.

MAINE

Maine, population 767,638, has one medical college, the Bowdoin Medical School, located in Brunswick and Portland, the latter having a population of 62,161.

Brunswick-Portland

BOWDOIN MEDICAL SCHOOL. The Medical Department of Bowdoin College. The first two years are given at Bowdoin College, Brunswick, the last two at Portland, building located on Chadwick Street.—Organized in 1820 as the Medical School of Maine. The first class graduated in 1821. Present title assumed in 1915. The faculty numbers 66. *Two years* of collegiate work, including courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees are $115 each year. The Dean is Dr. Addison S. Thayer, 10 Deering Street, Portland. The total number of students in 1915-16 was 60; graduates, 10. The ninety-sixth session begins Oct. 12, 1916, and ends June 21, 1917.

MARYLAND

Maryland, with a population of 1,351,941, contains two medical colleges, located in Baltimore, a city with 584,605 inhabitants. They are as follows: Johns Hopkins University Medical Department and the University of Maryland School of Medicine and College of Physicians and Surgeons, the last two having been merged.

To be eligible to practice medicine in Maryland, all students matriculating in the session of 1914-15 and thereafter, in addition to a four-year high school education, must have completed a year of college work including courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine. Students matriculating in 1918-19 and thereafter must have completed *two years* of College work.

Baltimore

JOHNS HOPKINS UNIVERSITY MEDICAL DEPARTMENT, Washington and Monument Streets.—Organized in 1893. The first class graduated in 1897. The faculty consists of 17 professors and 139 clinical professors, etc., a total of 156. The requirements for admission demand that the applicant either has (a) completed the chemical-biological course which leads to the A.B. degree in the university or (b) graduated at an approved college or scientific school and has a knowledge of French and German, physics, chemistry and biology, such as may be obtained from a year's course. The course extends over four years of eight and one-half months each. The charge for tuition is $240 for the first year and $200 for each of the other three years. The Dean is Dr. J. Whitridge Williams. Total registration for 1915-16 was 353; graduates, 82. The twenty-fourth session begins Oct. 3, 1916, and ends June 12, 1917.

UNIVERSITY OF MARYLAND SCHOOL OF MEDICINE AND THE COLLEGE OF PHYSICIANS AND SURGEONS, Lombard and Green Streets.—Organized in 1807 as the College of Medicine of Maryland. The first class graduated in 1810. In 1812 it became the University of Maryland School of Medicine. Baltimore Medical College was merged into it in 1913. In 1915 the College of Physicians and Surgeons was merged and the present name assumed. The combined faculty numbers 188. A year of collegiate work is required for admission. Beginning with the session of 1918-19 *two years* of college work will be required. The course covers four years of eight months each. The total fees are $165 each year; matriculation fee, $5; graduation fee, $30. The Dean is Dr. J. M. H. Rowland. Total registration for 1915-16 was 368; graduates, 123. The one hundred and tenth session begins Oct. 2, 1916, and ends June 1, 1917.

MASSACHUSETTS

Massachusetts, population, 3,662,339, has four medical colleges: Medical School of Harvard University, Boston University School of Medicine, College of Physicians and Surgeons and Tufts College Medical School. They are all situated in Boston, a city of 745,139.

Boston

MEDICAL SCHOOL OF HARVARD UNIVERSITY, 240 Longwood Avenue.—Organized in 1782. The first class graduated in 1788. It has a faculty of 54 professors and 182 associates, assistants, etc., a total of 236. Candidates for admission must present a recognized college degree with courses in general and organic chemistry or credits for *two years* of work in a recognized college or scientific school, which must include courses in physics, general and organic chemistry and biology. The session is four years of eight months each. The total fee for each is $225. The Dean is Dr. Edward H. Bradford. The total registration for 1915-16 was 334; graduates, 74. The one hundred and thirty-fifth session begins Sept. 25, 1916, and ends June 21, 1917.

BOSTON UNIVERSITY SCHOOL OF MEDICINE, 80 East Concord Street.—Organized in 1873. In 1874 the New England Female Medical College, founded in 1848, was merged into it. The first class graduated in 1874. *Two years* of collegiate work are required for admission. The faculty includes 30 professors, 40 associates, etc., making a total of 70. The course covers four years of eight months each. Total fees for each of the four years, respectively, are $170, $157, $151 and $150. The Dean is Dr. John P. Sutherland. Total registration for 1915-16 was 75; graduates, 18. The forty-fourth session begins Oct. 5, 1916, and ends June 6, 1917.

TUFTS COLLEGE MEDICAL SCHOOL, 416 Huntington Avenue.—Organized in 1893 as the Medical Department of Tufts College. The first class graduated in 1894. It has a faculty of 45 professors and 77 assistants, lecturers, etc., a total of 122. One year of collegiate work is required for admission. The course covers four years of eight months each. The total fees are $155 each year. The Dean is Dr. Charles F. Painter. Total registration for 1915-16 was 380; graduates, 70. The twenty-third session begins Sept. 21, 1916, and ends June 15, 1917.

COLLEGE OF PHYSICIANS AND SURGEONS, 517 Shawmut Avenue.—Organized in 1880. The first class graduated in 1882. Total attendance of medical students during 1915-16 was about 47. There were 12 graduates. *This college has been reported not recognized by the Massachusetts Medical Society and by the licensing boards of thirty-three states.*

MICHIGAN

Michigan, population 3,015,442, has three medical colleges. Two of these, the University of Michigan Department of Medicine and Surgery and the Homeopathic Medical College of the University of Michigan, are located at Ann Arbor, a city of 14,979 people. The Detroit College of Medicine and Surgery is located at Detroit, a city of 554,717 inhabitants.

To be eligible for license to practice medicine in Michigan, all students matriculating in and after the session of 1914-15,

in addition to an accredited four-year high school education, must have completed at least one year's work in an approved college of liberal arts, including college courses in physics, chemistry, biology and French or German, prior to beginning the study of medicine.

Ann Arbor

UNIVERSITY OF MICHIGAN MEDICAL SCHOOL.—Organized in 1850 as the University of Michigan Department of Medicine and Surgery. The first class graduated in 1851. Present title assumed in 1915. It has a faculty composed of 20 professors and 59 associates, instructors, etc., a total of 79. The entrance requirements are *two years* of college work, including courses in chemistry, physics and biology, with laboratory work, and a reading knowledge of one modern language. The curriculum embraces four years of nine months each. The total fees for Michigan students for the entire course of four years is $350 and for others about $400. The Dean is Dr. Victor C. Vaughan. The total registration for 1915-16 was 324; graduates, 64. The sixty-seventh session begins Oct. 5, 1915, and ends June 29, 1916.

UNIVERSITY OF MICHIGAN HOMEOPATHIC MEDICAL SCHOOL.—Organized in 1875. The first class graduated in 1877. The work of the first two years is taken in the same classes with the Medical School of the University of Michigan. The entrance requirements are *two years* of collegiate work. The Dean is Dr. W. B. Hinsdale. The total registration for 1915-16 was 44; graduates, 8. The next session begins Oct. 5, 1915, and ends June 9, 1916.

Detroit

DETROIT COLLEGE OF MEDICINE AND SURGERY, 250 St. Antoine Street.—Organized as the Detroit College of Medicine in 1885 by consolidation of Detroit Medical College, organized in 1868, and the Michigan College of Medicine, organized in 1880. Reorganized with present title in 1913. The first class graduated in 1886. Entrance requirements are one year of collegiate work. The faculty embraces 23 professors, 148 lecturers, etc., a total of 171. The course covers four years of eight months each. The fees for the four years, respectively, are $155, $150, $130 and $130. The Secretary is Dr. Joseph H. Hathaway. The total registration for 1915-16 was 180; graduates, 49. The thirty-second session begins Sept. 25, 1916, and ends May 31, 1917.

MINNESOTA

Minnesota, population 2,226,761, contains one medical school, the University of Minnesota Medical School, situated in Minneapolis, a city of 353,460, inhabitants.

Candidates for license to practice medicine in Minnesota who graduated subsequent to June 1, 1912, in addition to an accredited four-year high school education, must have completed *two years* of work the equivalent of that done in the liberal arts department of the University of Minnesota, including courses in physics, chemistry and biology, prior to beginning the study of medicine.

Minneapolis

UNIVERSITY OF MINNESOTA MEDICAL SCHOOL.—Organized in 1883 as the University of Minnesota College of Medicine and Surgery, reorganized in 1888 by absorption of St. Paul Medical College and Minnesota Hospital College. The first class graduated in 1889. In 1908 the Minneapolis College of Physicians and Surgeons, organized in 1883, was merged. In 1909 the Homeopathic College of Medicine and Surgery was merged. Present title in 1913. The faculty includes 46 professors and 61 instructors and assistants, a total of 107. The curriculum covers four years of nine months each and a year's internship in an approved hospital. The entrance requirements are *two years* of university work which must include one year each of physics, general chemistry, qualitative analysis, zoology or botany, and French or German, all in addition to a four-year high school course, including two years of Latin. Students entering hereafter will be required to secure a degree of B.S. or A.B. before the M.D. is granted. Total fees are $150 each year. The Dean is Dr. E. P. Lyon. The total registration for 1915-16 was 253; graduates, 51. The twenty-ninth session begins Sept. 27, 1916, and ends June 15, 1917.

MISSISSIPPI

Mississippi, population, 1,926,778, has one medical college, the Department of Medicine of the University of Mississippi, which is located at Oxford, a city of 2,014 inhabitants.

Candidates for license to practice medicine in Mississippi who matriculate in the session of 1915-16 and thereafter, in addition to a standard four-year high school education, must have completed a year's work in an approved college or university, including courses in physics, chemistry, biology and a modern language, before entering on the study of medicine.

Oxford

UNIVERSITY OF MISSISSIPPI DEPARTMENT OF MEDICINE.—Organized in 1903. Gives only the first two years of the medical course. In 1908 a clinical department was established at Vicksburg, but was discontinued in 1910 after graduating one class. The session extends over eight and a half months. Entrance requirements are one year of collegiate work in addition to an accredited four-year high school education. The total fees each year are $98. The faculty numbers 21. The Dean is Dr. W. S. Leathers. The total registration for 1915-16 was 55. The fourteenth session begins Sept. 20, 1916, and ends May 29, 1917.

MISSOURI

Missouri, population 3,391,789, has seven medical colleges. St. Louis, population 745,988, contains three of these, viz., the School of Medicine of St. Louis University, Washington University Medical School and the Medical Department of the National University of Arts and Sciences. Kansas City, with a population of 289,879, has three colleges, the Eclectic Medical University, the Kansas City College of Medicine and Surgery and the Southwest School of Medicine and Hospital. The School of Medicine of the University of Missouri is at Columbia, a town of 12,103 people.

Columbia

UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE.—Organized at St. Louis in 1845; was discontinued in 1855, but was reorganized at Columbia in 1872. Teaching of the clinical years was suspended in 1909. The faculty includes 13 professors and 7 assistant professors, lecturers, etc., a total of 20. The course covers two years of nine months each. The entrance requirements are *two years* of college work including French or German, 8 hours; general zoology, 8 hours; physics, 8 hours; inorganic chemistry, 8 hours, and general bacteriology, 3 hours. Total fees are $45 each year. The acting Dean is Dr. Guy L. Noyes. Total registration for students for 1915-16 was 74. The next session begins Sept. 18, 1916, and ends June 7, 1917.

Kansas City

ECLECTIC MEDICAL UNIVERSITY, 1423 Independence Avenue.—Organized at Kansas City, Mo., in 1898 with the present title. Moved to Kansas City, Kan., in 1907, and took the name of Western Eclectic College of Medicine and Surgery. Returned to Kansas City, Mo., in 1909 and resumed the present title. First class graduated in 1900. No students or graduates are reported for 1915-16, and it is not known whether the school will reopen. *Reported not in good standing by the Missouri State Board of Health and by thirty other state licensing boards.*

KANSAS CITY COLLEGE OF MEDICINE AND SURGERY, Eclectic, Twenty-Third and Holmes Streets.—An offshoot of the Eclectic Medical University, organized in 1915. It apparently took away all the students from the latter, which reports no students or graduates for 1915-16. The new school had a total registration for 1915-16 of 86; graduates, 12. Since this school is an offshoot of a Class C medical college reported not recognized by the Missouri State Board, no higher rating could be granted to it, pending an inspection.

SOUTHWEST SCHOOL OF MEDICINE AND HOSPITAL, Homeopathic.—Organized in 1915 following the demise of the Kansas City Hahnemann Medical College, occupies the same building and most of the students enrolled were those in the old school. Total enrolment in 1915, was 20; graduates, 8. It was not learned whether the college would reopen. *It is reported as not in good standing by the Missouri State Board of Health.*

St. Louis

WASHINGTON UNIVERSITY MEDICAL SCHOOL, Kingshighway and Euclid Avenue.—Organized in 1842 as the Medical Department of St. Louis University. In 1855 it was chartered as an independent institution under the name of St. Louis Medical College. The first class graduated in 1843. In 1891 it became the Medical Department of Washington University. In 1899 it absorbed the Missouri Medical College. The faculty comprises 27 professors and 67 lecturers, instructors, etc., a total of 94. *Two full years* of college work are required for admission including courses in English, physics, chemistry and biology and a reading knowledge of German. The course is four years of eight months each. The total fees for the four years are, respectively, $155, $150, $150, and $155. The Dean is Dr. Philip A. Shaffer. The total registration for 1915-16 was 92; graduates, 17. The next session begins Sept. 28, 1916, and ends June 14, 1917.

ST. LOUIS UNIVERSITY SCHOOL OF MEDICINE, 1402 South Grand Avenue.—Organized in 1901 as the Marion-Sims-Beaumont Medical College by union of Marion Sims Medical College, organized in 1890, and Beaumont Hospital Medical College, organized in 1886. First class graduated in 1900. It became the Medical Department of St. Louis University in 1903. The faculty is composed of 48 professors, 85 lecturers and assistants, a total of 133. One year of college subjects preliminary to the four years of medical subjects is given in the medical school. After Nov. 1, 1917, *two years* of collegiate work will be required for admission. The curriculum covers four years of thirty-two weeks each. The total fees are $150 each year. The Dean is Dr. Hanau W. Loeb. The total registration for 1915-16 was 231; graduates, 44. The next session begins Oct. 2, 1916, and ends June 1, 1917.

NATIONAL UNIVERSITY OF ARTS AND SCIENCES, Medical Department, Garrison and Lawton Avenues.—Organized in 1873 as the American Medical College, and Eclectic Institution. Eclecticism dropped in 1910. Absorbed the Barnes Medical College in 1911. Became the Medical Department of the National University of Arts and Sciences in 1912. Absorbed St. Louis College of Physicians and Surgeons in 1915. Two classes were graduated each year from 1874 to 1883, inclusive. Since then one class has graduated each year. The Secretary is Dr. E. L. Cooley. The total registration for 1915-16 was 149; graduates, 54. The next session begins Sept. 20, 1916, and ends June 10, 1917.

NEBRASKA

Nebraska, population 1,258,624, has three medical colleges. The University of Nebraska College of Medicine and the John A. Creighton Medical College of Omaha, population 135,455, and the Lincoln Medical College at Lincoln, population 46,028.

Lincoln

LINCOLN MEDICAL COLLEGE. Eclectic. Corner 13th and P Streets, Lincoln.—Organized in 1890 as the Lincoln Medical College. Became Cotner University Medical College in 1911. Affiliation with Cotner University cancelled and present title resumed in 1915. The first class graduated in 1891. The total registration for 1915-16 was 25; graduates, 9. *Official reports indicate that diplomas from this college are not recognized by the licensing boards of twenty-nine states.*

Omaha

JOHN A. CREIGHTON MEDICAL COLLEGE, Fourteenth and Davenport Streets. It is the Medical Department of Creighton University.—Organized in 1892. The first class graduated in 1893. It has a faculty of 20 professors and 33 associates, lecturers and assistants, a total of 53. One year of collegiate work is required for admission. The course of study embraces four years of eight months each. The total fees each year are $130; matriculation fee, $5. Total registration for 1915-16 was 128; graduates, 41. The thirty-fifth session begins Sept. 22, 1916, and ends June 2, 1917.

UNIVERSITY OF NEBRASKA COLLEGE OF MEDICINE, Forty-Second Street and Dewey Avenue.—Organized in 1881 as the Omaha Medical College. The first class graduated in 1882. It became the Medical Department of Omaha University in 1891. In 1902 it affiliated with the University of Nebraska, with the present title. The first two years were given at Lincoln and the last two in Omaha until 1913 when all four years were transferred to Omaha. The faculty is composed of 31 professors and 28 lecturers and instructors, total 59. *Two years* of collegiate work are required for admission including courses in physics, chemistry, zoology and German. The fees for each of the four years, respectively, are $135, $130, $120 and $120. The Dean is Dr. Irving S. Cutter. Total registration for 1915-16 was 123; graduates, 21. The next session begins Sept. 18, 1916, and ends June 9, 1917.

NEW HAMPSHIRE

New Hampshire, population 440,584, has one medical college, located at Hanover, population 2,075.

To be eligible for license to practice medicine in New Hampshire, all students matriculating in and after the session of 1915-16, in addition to a four-year high school education, must have completed at least *two years* of work in an approved college of liberal arts, prior to beginning the study of medicine.

DARTMOUTH MEDICAL SCHOOL.—Organized as New Hampshire Medical Institute in 1797. The first class graduated in 1798. It is under the control of the trustees of Dartmouth College. Clinical Teaching was discontinued in 1914. The faculty is made up of 10 professors and 2 instructors, a total of 12. *Two years* of collegiate work are required for admission. The course covers nine calendar months in each year, or eight months of actual teaching. Candidates for the B.S. degree in Dartmouth College may substitute the work of the first two years in medicine for that of the junior and senior years in the academic department. Candidates for the A.B. degree may make a similar saving of one year. The fees for the two years in medicine are, respectively, $174 and $175.50. Dean, Dr. John M. Gile; Secretary, Colin C. Stewart. The total registration for 1915-16 was 33. The next session opens Sept. 21, 1916, and ends June 20, 1917.

NEW YORK

New York State, population 10,086,568, has ten medical colleges. Seven of these, College of Physicians and Surgeons (Columbia University), Long Island College Hospital, New York Homeopathic Medical College and Hospital, New York Medical College and Hospital for Women, Cornell University Medical College, the University and Bellevue Hospital Medical College and Fordham University School of Medicine, are located in New York City, population 5,468,190. Albany Medical College is located in Albany, a city of 103,580 people. The University of Buffalo Medical Department is situated in Buffalo, population 461,335. The College of Medicine, Syracuse University, is in Syracuse, a city of 152,534 inhabitants.

Albany

ALBANY MEDICAL COLLEGE, Lancaster and Jay Streets.—Organized in 1838. The first class graduated in 1839. It became the Medical Department of Union University in 1873. In 1915, Union University assumed full control. The faculty is composed of 9 professors and 49 instructors, assistants, etc., a total of 71. One year of collegiate work, including college courses in physics, chemistry, biology and French or German is required for admission. The curriculum covers four years of eight months each. The fees for each year are $160. The Dean is Dr. Thomas Ordway. The total registration for 1915-16 was 148; graduates, 48. The eighty-sixth session begins Sept. 25, 1916, and ends June 8, 1917.

Buffalo

UNIVERSITY OF BUFFALO MEDICAL DEPARTMENT, High Street, near Main.—Organized in 1846. The first class graduated in 1847. It absorbed the Medical Department of Niagara University in 1898. The faculty is composed of 31 professors and 74 lecturers, assistants, etc., a total of 105. One year of collegiate work, including college courses in physics, chemistry and biology are required for admission. The course covers four years of eight months each. The total fees for the four years, respectively, are $185, $180, $140 and $140. The Dean is Dr. Thomas H. McKee. Total registration for 1915-16 was 181; graduates, 35. The seventy-first session begins Sept. 25, 1916, and ends June 8, 1917.

New York

COLUMBIA UNIVERSITY COLLEGE OF PHYSICIANS AND SURGEONS, 437 West Fifty-Ninth Street.—Organized in 1807 by the regents of the University of the State of New York as their medical department. The first class graduated in 1811. In 1860 it became, by affiliation, the Medical Department of Columbia College. It was made a permanent part of Columbia College by legislative enactment in 1891. That institution became Columbia University in 1896. The faculty is composed of 17 professors and 233 instructors, demonstrators, etc., a total of 250. *Two years* of collegiate work, including courses in physics, chemistry and biology and either French or German are required for admission. The work covers four years of eight months each. The Dean is Dr. Samuel W. Lambert. The total fees for the four years, respectively, are $265, $251, $250 and $275. Total registration for 1915-16 was 419; graduates, 73. The one hundred and ninth session begins Sept. 27, 1916, and ends June 6, 1917.

CORNELL UNIVERSITY MEDICAL COLLEGE, First Avenue and Twenty-Eighth Street, New York City and Ithaca.—Organized in 1898. The first class was graduated in 1899. The work of the first year may be taken either in Ithaca or New York. The faculty is composed of 48 professors and 76 assistants, lecturers, instructors, etc., a total of 124. All candidates for admission must be graduates of approved colleges or scientific schools or seniors of approved colleges which will permit them to substitute the first year of this medical school for the fourth year of their college course and will confer on them the Bachelor's degree on the completion of the year's work. The candidate must also have such knowledge of physics, inorganic chemistry and biology as may be obtained in college by a year's course in these subjects when accompanied by laboratory work. The fees for each of the four years are, respectively, $190, $185, $185 and $200. The Dean is Dr. William M. Polk. Total registration for 1915-16 was 151; graduates, 30. The nineteenth session begins Sept. 27, 1916, and ends June 16, 1917.

FORDHAM UNIVERSITY SCHOOL OF MEDICINE, Bathgate Avenue and Fordham Road.—Organized in 1905 as the School of Medicine of St. John's College. Present title assumed in 1907. First class graduated in 1909. The faculty consists of 51 professors and 59 lecturers and assistants, a total of 110. The course of instruction covers four years of eight and a half months each. Total fees for the four years, respectively, are $216, $216, $212 and $210. A year's work in a recognized college of liberal arts, including college courses in physics, chemistry and biology is required for admission. The Dean is Dr. William P. Healy. The total registration for 1915-16 was 67; graduates, 42. The twelfth session begins Sept. 29, 1916, and ends June 11, 1917.

LONG ISLAND COLLEGE HOSPITAL, Henry Street, near Atlantic Avenue, Brooklyn.—Organized in 1858. The first class graduated in 1860. It has a faculty of 16 professors and 111 assistants, instructors, etc., a total of 127. A year of collegiate work, including college courses in physics, chemistry and biology is required for admission. In and after 1918-19 *two years* of collegiate work will be required for admission. The course covers four years of eight months each. Fees: first year, $210; second year, $205; third, $200, and $200 for the fourth year. The secretary is Dr. Otto V. Huffman. Total registration 1915-16 was 272; graduates, 84. The fifty-ninth session begins Sept. 25, 1916, and ends June 1, 1917.

NEW YORK HOMEOPATHIC MEDICAL COLLEGE AND FLOWER HOSPITAL, Eastern Boulevard, between Sixty-Third and Sixty-Fourth Streets.—Organized in 1858. Incorporated in 1860 as the Homeopathic Medical College of the State of New York. The title, New York Homeopathic Medical College, was assumed in 1869. Present title assumed in 1908. The first class graduated in 1861. The faculty consists of 26 professors and 55 assistants, lecturers, etc., a total of 81. The total fees for each year of the four years, respectively, are $190, $185, $175 and $205. The Dean is Dr. Royal S. Copeland. Total registration for 1915-16 was 177; graduates, 63. The fifty-seventh session begins Sept. 26, 1916, and ends June 6, 1917.

NEW YORK MEDICAL COLLEGE AND HOSPITAL FOR WOMEN (Homeopathic) 17-19 West One Hundred and First Street.—Organized in 1863. The first class graduated in 1864. The faculty numbers 73. One year of collegiate work is required for admission which must include courses in physics, chemistry and biology. The course covers four years of thirty weeks each. The fees for each of the four years, respectively, are $180, $175, $160 and $180. The Dean is Dr. Cornelia G. Brant. The total registration for 1915-16 was 47; graduates, 11. The fifty-fourth session begins Sept 20, 1916, and ends June 1, 1917.

UNIVERSITY AND BELLEVUE HOSPITAL MEDICAL COLLEGE, First Avenue and Twenty-Sixth Street.—Organized in 1898 by the union of the New York University Medical College, organized in 1841, and the Bellevue Hospital Medical College, organized in 1861. It is the Medical Department of New York University. First class graduated in 1899. The faculty is composed of 53 professors and 127 instructors, etc., in all 180. The course covers four years of eight months each. Entrance requirements are one year of collegiate work, in addition to a standard four-year high school course, including college courses in physics, chemistry and biology. On and after Jan. 1, 1918 (session of 1918-19), *two years* of college work will be required for admission, including courses in the prescribed sciences and a modern language. The fees are $200 per year; graduation fee, $25. The Dean is Dr. Samuel A. Brown. Total registration for 1915-16 was 395; graduates, 46. The next session begins Sept. 20, 1916, and ends June 6, 1917.

Syracuse

SYRACUSE UNIVERSITY COLLEGE OF MEDICINE, 307-311 Orange Street.—Organized in 1872, when the Geneva Medical College, chartered in 1834, was removed to Syracuse, under the title "The College of Physicians and Surgeons of Syracuse University." Present title assumed in 1875, when a compulsory three-year graded course was established. The first class graduated in 1873 and a class graduated each subsequent year. In 1889 the amalgamation with the university was made complete. Course extended to four years in 1896. Two years of a recognized college course are required for admission. The course covers four years of thirty-five weeks each. The total fees are $175 annually. The faculty is composed of 21 professors and 59 associate and assistant professors, lecturers and instructors. The Dean is Dr. John L. Heffron. The total enrolment for 1915-16 was 115; graduates, 24. The forty-fifth session begins Sept. 19, 1916, and ends June 12, 1917.

NORTH CAROLINA

North Carolina, population 2,371,095, has three medical schools, each of which gives only the first two years of the medical course. The School of Medicine of the University of North Carolina is located at Chapel Hill, population 1,149. The Leonard Medical School is at Raleigh, population 19,980. Wake Forest College School of Medicine it at Wake Forest, population 1,443.

Chapel Hill

UNIVERSITY OF NORTH CAROLINA SCHOOL OF MEDICINE.— Organized in 1890. Until 1902 this school gave only the work of the first two years, when the course was extended to four years by the establishment of a department at Raleigh. The first class graduated in 1903. A class was graduated each subsequent year, including 1910, when the clinical department at Raleigh was discontinued. One year of collegiate work is required for admission. The faculty is composed of 12 professors and 13 lecturers, assistants, etc., a total of 25. The total fees for the two years, respectively, are $120 and $125. The Dean is Dr. I. H. Manning. The total registration for 1915-16 was 77. The thirty-first session begins Sept. 12, 1916, and ends June 6, 1917.

Raleigh

LEONARD MEDICAL SCHOOL.— Colored. This department of Shaw University was established in 1882. Classes were graduated in 1886, 1888 and in all subsequent years, including 1914 when clinical teaching was discontinued. A year of collegiate work is required for admission. It has a faculty of 5. The course covers four years of seven and a half months each. The total fees for each year are $30; graduation fee, $10. The Dean is Dr. George H. Stoddard. Total registration for 1915-16 was 5. The thirty-fifth session begins Sept. 27, 1916, and ends May 9, 1917.

Wake Forest

WAKE FOREST COLLEGE SCHOOL OF MEDICINE.—This school was organized in 1902. The faculty, including the professors of chemistry, physics and biology, numbers 8, exclusive of laboratory assistants. Only the first two years of the medical course are offered after the completion of freshmen and sophomore college work, and on this combined course the B.S. degree is conferred. Each annual course extends over nine months. The fees for each year aggregate $103. The Secretary is E. B. Earnshaw. The total registration for 1915-16 was 34. The fifteenth session begins Sept. 5, 1916, and ends May 25, 1917.

NORTH DAKOTA

North Dakota, population 713,083, has one medical college, the School of Medicine of the University of North Dakota, which is situated at University, a suburb of Grand Forks, a city of 15,332 people. It gives only the first two years of the medical course.

Candidates for license to practice medicine in North Dakota who graduated in 1912 and thereafter, in addition to a four-year high school education must have completed *two years* of work in an approved college of liberal arts including courses in Latin, physics, chemistry, botany and zoology, prior to beginning the study of medicine. Beginning in 1918 every applicant for a license must show evidence of having spent at least one year as an intern in a hospital.

University

UNIVERSITY OF NORTH DAKOTA SCHOOL OF MEDICINE.— Organized in 1905. The faculty is composed of 6 professors and 12 instructors, a total of 18. The course consists of *two years* of academic work and two years of medicine, occupying nine months each year. The total fee for each of the medical years is $50. The Dean is Dr. Harley E. French. The total registration for 1915-16 was 23. The eleventh session begins Sept. 26, 1916, and ends June 20, 1917.

OHIO

Ohio, population 5,038,627, has five medical colleges. Two of these, the Medical College of the University of Cincinnati and the Eclectic Medical College, are located in Cincinnati, a city of 406,706 inhabitants. Cleveland, population 656,975, contains one medical school, Western Reserve University School of Medicine. Columbus, population 209,722, contains the two departments of the Ohio State University, the College of Medicine and the College of Homeopathic Medicine.

Cincinnati

UNIVERSITY OF CINCINNATI COLLEGE OF MEDICINE, Clifton Avenue, west of Vine Street.— Organized in 1909 by the union of the Medical College of Ohio (founded in 1819) with the Miami Medical College (founded in 1852). The Medical College of Ohio became the Medical Department of the University of Cincinnati in 1896. Under a similar agreement, March 2, 1909, the Miami Medical College also merged into the University, when the title of Ohio-Miami Medical College of the University of Cincinnati was taken. Present title assumed in 1915. The faculty consists of 47 professors, 94 associates, assistants, etc., a total of 141. The course covers four years of eight months each. The fees for each of the first three years are $150 and for the fourth year, $170. The Dean is Dr. Christian R. Holmes. The total registration for 1915-16 was 88; graduates, 22. The next session begins Oct. 3, 1916, and ends June 16, 1917.

ECLECTIC MEDICAL COLLEGE, 630 West Sixth Street.— Organized in 1833 at Worthington as the Worthington Medical College. Removed to Cincinnati in 1843. In 1845 it was chartered as the Eclectic Medical Institute. In 1857 the American Medical College, organized in 1839, was merged into it, and in 1859 the Eclectic College of Medicine and Surgery, organized in 1856, was merged into it. In 1910 it assumed its present title. Classes were graduated in 1833 and in all subsequent years except 1839 to 1843, inclusive. It has a faculty of 25 professors and 10 lecturers and assistants, a total of 35. One year of college work is required for admission. The course covers four years of eight months each. The fees are $120 for each year. The Secretary is Dr. John K. Scudder. Total registration for 1915-16 was 101; graduates, 28. The next session begins Sept. 14, 1916, and ends May 14, 1917.

Cleveland

WESTERN RESERVE UNIVERSITY SCHOOL OF MEDICINE, 1353 East Ninth Street.— Organized in 1843 as the Cleveland Medical College. The first class graduated in 1844. It assumed the present title in 1881. In 1910 it absorbed the Cleveland College of Physicians and Surgeons. The faculty includes 38 professors and 58 lecturers, assistants, etc., a total of 96. The curriculum embraces four years of eight and one-half months each. Three years of college work are required for admission. The total fees for each of the four years are, respectively, $162, $155, $150 and $155. The Secretary is Dr. F. C. Waite. The total registration for 1915-16 was 178; graduates, 49. The seventy-fourth session begins Sept. 28, 1916, and ends June 14, 1917.

Columbus

OHIO STATE UNIVERSITY COLLEGE OF MEDICINE, Buttles Avenue and Park Street.— Organized in 1907 as the Starling-Ohio Medical College by the union of Starling Medical College (organized 1847) with the Ohio Medical University (organized 1890). In 1914 it became an integral part of the Ohio State University with its present title. The faculty consists of 42 professors and 56 lecturers, demonstrators, etc., a total of 98. *Two years* of collegiate work are required for admission. The course covers four years of eight months each. Tuition fees are $150 each year. The Dean is Dr. E. F. McCampbell. The total registration for 1915-16 was 185; graduates, 61. The next session begins Sept. 19, 1916, and ends June 23, 1917.

OHIO STATE UNIVERSITY COLLEGE OF HOMEOPATHIC MEDICINE.— Organized in 1914, when the property of the Cleveland-Pulte Medical College of Cleveland was transferred to the Ohio State University. The faculty numbers 17. *Two years* of college work are required for admission. Tuition fees are $150 each year. The Dean is Dr. Claude A. Burrett. The total registration for 1915-16 was 39; graduates, 7. The third session begins Sept. 19, 1916, and ends June 23, 1917.

OKLAHOMA

Oklahoma, population 2,114,307, has one medical college, the School of Medicine of the University of Oklahoma. The work of the first and second years is given in the academic laboratories at Norman, a city of 3,724 inhabitants. The work of the third and fourth years is given in Oklahoma City, which has a population of 88,158 and which is eighteen miles north of Norman.

To be eligible for license to practice medicine in Oklahoma, all students matriculating in 1914-15, in addition to a four-year high school education, must have completed at least one year of work in an approved college of liberal arts, including courses in physics, chemistry, biology and a modern language prior to beginning the study of medicine. For students matriculated in and after 1917-18, two years of preliminary college work will be required.

Norman and Oklahoma City

UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE.— Organized in 1900. Gave only the first two years of the medical course until 1910, when a clinical department was established at Oklahoma City. It has a faculty of 46 professors and 8 instructors, a total of 54. One year of collegiate work is required for admission and beginning with the session of 1917-18 *two years* will be required. The course is four years of nine months each. An optional course of six years is offered for the degrees of B.S. and M.D. The total fees for the four years are, respectively, $55, $43, $25 and $25. The Dean is Dr. Leroy Long, 325 East Fourth Street, Oklahoma City. The total registration for 1915-16 was 75; graduates, 20. The seventeenth session begins Sept. 19, 1916, and ends June 5, 1917.

OREGON

Oregon, population 809,490, has one medical college, the University of Oregon Department of Medicine located in Portland, a city of 272,833 population.

Portland

UNIVERSITY OF OREGON DEPARTMENT OF MEDICINE, Lovejoy and Twenty-Third Streets.— Organized in 1887. The first class graduated in 1888. A class graduated each subsequent year except 1898. Became an integral part of the University of Oregon in 1910. The Willamette University Medical Department was merged in 1913. It has a faculty

of 28 professors and 35 lecturers, assistants, etc., a total of 63. Entrance requirements are one year of college work or its equivalent. The course is four years of eight months each. Fees: Matriculation, $5; tuition, $150 each year. The Dean is Dr. K. A. J. Mackenzie. The total registration for 1915-16 was 81; graduates, 16. The thirtieth session begins Oct. 1, 1916, and ends June 1, 1917.

PENNSYLVANIA

Pennsylvania, population 8,383,992, has six medical colleges. Of these, Philadelphia, having a population of 1,683,664, contains five, as follows: University of Pennsylvania School of Medicine, Jefferson Medical College, Hahnemann Medical College and Hospital, Woman's Medical College of Pennsylvania and Temple University Department of Medicine. The other school, the School of Medicine of the University of Pittsburgh, is situated in Pittsburgh, a city of 571,984.

To be eligible for license to practice medicine in Pennsylvania, students matriculating in the session 1914-15 and thereafter, in addition to a four-year high school education must have completed a year's work either in an approved college of liberal arts or in a preliminary year in the medical college, including college courses in physics, chemistry and biology, before beginning the study of medicine. He must also have completed an internship of at least one year in an approved hospital.

Philadelphia

UNIVERSITY OF PENNSYLVANIA SCHOOL OF MEDICINE, Thirty-sixth Street and Hamilton Walk.—Organized in 1765. Classes were graduated in 1768 and in all subsequent years except 1772-79, inclusive. The original title was the Department of Medicine, College of Philadelphia. The present title, School of Medicine of the University of Pennsylvania was adopted in 1909. It granted the first medical diploma issued in America. In 1916 it took over the Medico-Chirurgical College of Philadelphia to develop it as a graduate school. The faculty is made up of 49 professors, associate, adjunct and assistant professors, and 130 lecturers, associates, instructors, etc., a total of 179. The minimum requirements for admission are a standard four-year high school course or its equivalent, plus *two years* of work in an approved College of Arts and Science, including courses in French or German, and in physics, chemistry and general biology or zoology, with appropriate laboratory exercises. The course embraces four years of study of thirty-four weeks each. The total fees for each of the four years are, respectively, $233, $210, $210 and $214. The Dean is Dr. William Pepper. Total registration for 1915-16 was 317; graduates, 74. The one hundred and fifty-first session begins Sept. 29, 1916, and ends June 20, 1917.

JEFFERSON MEDICAL COLLEGE, Tenth and Walnut Streets.—Organized in 1825 with its present title as the Medical Department of Jefferson College, Canonsburg, Pa. Classes have been graduated annually since 1826. In 1838 a separate university charter was granted without change of title since which time it has continued under the direction of its own board of trustees. It has a faculty of 42 professors, associate and assistant professors, and 106 associates, lecturers, demonstrators and instructors, a total of 148. Entrance requirements are a completed standard four-year high school or college preparatory course, or the equivalent, and in addition *two years* of work in an approved college of arts and science, including courses in a modern language other than English, with specified courses in physics, chemistry and biology with laboratory work amounting to 8 semester hours each. The course of study covers graded work of four years of eight and a half months each. The tuition is $200 a year with a matriculation fee of $5 paid on admission. The Dean is Dr. Ross V. Patterson. The total registration for 1915-1916 was 538; graduates, 162. The ninety-second session begins September 25, 1916 and ends June 2, 1917.

WOMAN'S MEDICAL COLLEGE OF PENNSYLVANIA, Twenty-First and N. College Avenue.—Organized in 1850. Classes were graduated in 1852 and in all subsequent years except 1862. It has a faculty of 11 professors and 48 assistants, lecturers, etc., in all 59. Entrance requirements are a completed course in a standard secondary school, and in addition *two years* of collegiate work, including courses in physics, chemistry, biology and two foreign languages, one of which must be French or German. The curriculum covers four years of eight months each. Fees for each of the four years are, respectively, $192, $176, $183 and $179.50. The Dean is Dr. Clara Marshall. The total registration for 1915-16 was 55; graduates, 17. The seventy-seventh session begins Sept. 20, 1916, and ends June 6, 1917.

HAHNEMANN MEDICAL COLLEGE AND HOSPITAL OF PHILADELPHIA, 226 North Broad Street.—Organized in 1848 as the Homeopathic Medical College of Pennsylvania. In 1869 it united with the Hahnemann Medical College of Philadelphia, taking the latter title. Assumed present title in 1885. The first class graduated in 1849. Entrance requirements are a completed course in a standard secondary school and in addition a preliminary year devoted to college courses in physics, chemistry and biology. It has a faculty of 48 professors and 41 lecturers, instructors, etc., in all 89. The work covers four years of eight and a half months each. Total fees for the four years, respectively, are $185, $185, $175 and $175. The Dean is Dr. William A. Pearson. The total registration for the college year 1915-16 was 98; graduates, 20. The sixty-ninth session begins Oct. 1, 1916, and ends May 31, 1917.

THE TEMPLE UNIVERSITY DEPARTMENT OF MEDICINE, Eighteenth and Buttonwood Streets.—Organized in 1901. The first class graduated in 1904. The faculty numbers 98. The fees for each of the four years, respectively, are $168.50, $167, $151 and $161. The Dean is Dr. Frank C. Hammond. The total registration for 1915-16 was 46; graduates, 13. The sixteenth session begins Sept. 18, 1916, and ends June 9, 1917.

Pittsburgh

UNIVERSITY OF PITTSBURGH SCHOOL OF MEDICINE, Grant Boulevard.—Organized in 1886, as the Western Pennsylvania Medical College and in 1906 became an integral part of the University of Pittsburgh, removing to the university campus in 1910. The first class graduated in 1887. The faculty is composed of 19 professors and 89 associates, assistants, etc., 108 in all. Entrance requirements are *two years* of recognized college work, to have included essentially courses in chemistry (inorganic and organic), physics, biology and German or French, based on a four-year high school preparation. It is possible for students to get the degree of B.S. and M.D. in six years. The course of study for medicine alone is four years of eight and a half months each. The tuition is $250 a year. The Dean is Dr. Thomas S. Arbuthnot. The total registration for 1915-16 was 111; graduates, 22. The thirty-first session begins Sept. 25, 1916, and ends June 13, 1917.

SOUTH CAROLINA

South Carolina, population 1,607,745, has one medical college, situated in Charleston, a city of 60,427 people.

Charleston

THE MEDICAL COLLEGE OF THE STATE OF SOUTH CAROLINA, Lucas and Calhoun Streets.—Organized in 1823 as the Medical College of South Carolina. The first class graduated in 1825. In 1832 a medical college bearing the present title was chartered and the two schools continued as separate institutions until they were merged in 1838. Classes were graduated in all years except 1862 to 1865, inclusive. In 1913, by legislative enactment, it became a state institution. It has a faculty of 32 professors and 28 lecturers, instructors, etc., a total of 60. The course covers four years of eight months each. *Two years* of collegiate work including courses in physics, chemistry and biology are required for admission in addition to a standard high school preparation. The total fees are $140 each year. The Dean is Dr. Robert Wilson, Jr. Total enrolment for 1915-16 was 61; graduates, 16. The eighty-eighth session begins Oct. 2, 1916, and ends June 7, 1917.

SOUTH DAKOTA

South Dakota, population 680,046, has one medical college, the University of South Dakota College of Medicine, located at Vermilion, a town of 2,187 people.

To be eligible for license to practice medicine in South Dakota, graduates of 1915 and thereafter must show that they matriculated in and graduated from medical colleges which required at least *two years* of collegiate work for admission, including courses in physics, chemistry, biology and a modern language. This affects all students who matriculated in the session of 1911-12 and thereafter.

Vermilion

UNIVERSITY OF SOUTH DAKOTA COLLEGE OF MEDICINE.—Organized in 1907. Offers only the first two years of the medical course. *Two years'* work in a college of liberal arts is required for admission. The fees are $60 each year. The faculty numbers 10. The Dean is Christian P. Lommen, B.S. The total registration for 1915-16 was 12. The tenth session begins Sept. 19, 1916, and ends June 14, 1917.

TENNESSEE

Tennessee, population 2,271,379, has four medical colleges. Of these Vanderbilt University Medical Department and Meharry Medical College are situated in Nashville, a city with a population of 115,978. The College of Medicine of the University of Tennessee and the University of West Tennessee College of Medicine and Surgery are located in Memphis, population 146,113.

To be eligible for a license to practice medicine in Tennessee students matriculating in the session of 1914-15 and thereafter must have completed one year of collegiate work including courses in physics, chemistry, biology and a modern language in addition to a four year high school course before entering on the study of medicine.

Memphis

UNIVERSITY OF TENNESSEE COLLEGE OF MEDICINE, three buildings, 879 Madison Avenue, 880 Monroe Avenue and 718 Union Avenue.—Organized in 1876 at Nashville as Nashville Medical College. First class graduated 1877, and a class graduated each subsequent year. Became Medical Department University of Tennessee 1879. In 1909 it united with the Medical Department of the University of Nashville to form the joint Medical Department of the Universities of Nashville and Tennessee. This union was dissolved in 1911. The trustees of the University of Nashville by formal action of that board named the University of Tennessee College of Medicine as its legal successor in medical teaching, transferring all of its college and hospital equipment to the successor. This college then removed to Memphis, where it united with the College of Physicians and Surgeons. The Memphis Hospital Medical College was merged in 1913. Lincoln Memorial University Medical Department was merged in 1914. Entrance requirements are a completed secondary education plus one year of collegiate work. The fees are $100 per year for bona fide residents of the state, and $150 per year for non-residents; for the fourth year, $175. The Dean is Dr. Herbert Thomas Brooks. Total registration for 1915-16 was 180;

graduates, 74. These figures include 21 students from the Lincoln Memorial University, 14 of whom were granted diplomas by the latter this year. The next session begins Sept. 23, 1916, and ends June 6, 1917.

UNIVERSITY OF WEST TENNESSEE COLLEGE OF MEDICINE AND SURGERY, Colored. 1190 South Phillips Place.— Organized in 1900. The first class graduated in 1904, and a class graduated each subsequent year. It has a faculty of 22. The course covers four years. One year of college work is required for admission. The fees are $55 per year; graduation, $10 extra. The Dean is Dr. M. V. Lynk. Registration for 1915-16 was 27; graduates, 9. The seventeenth session begins Sept. 14, 1916, and ends May 3, 1917. *Official reports indicate that the diplomas of this college are not recognized as an acceptable qualification for the license by the licensing boards of thirty-four states.*

Nashville

VANDERBILT UNIVERSITY MEDICAL DEPARTMENT.—This school was founded in 1874. The first class graduated in 1875. The faculty consists of 25 professors and 59 lecturers, a total of 84. One year of collegiate work is required for admission. The course covers four years of nearly eight and a half months each. The total fees for each of the first three years are $150, and for the fourth year, $175. The Dean is Dr. L. E. Burch. The total registration for 1915-16 was 212; graduates, 90. The forty-third session begins Oct. 2, 1916, and ends June 13, 1917.

MEHARRY MEDICAL COLLEGE, Colored. First Avenue, South, and Chestnut Street.—This school was organized in 1876 as the Medical Department of Central Tennessee College, which became Walden University in 1900. First class graduated in 1877. Obtained new charter independent of Walden University in 1916. The faculty is made up of 13 professors and 12 instructors, demonstrators, etc., 25 in all. The work embraces four years of thirty weeks each. The total fees for each of the first three years are $70 and for the fourth year, $80. The Dean is Dr. G. W. Hubbard. Total registration for 1915-16 was 301; graduates, 93. The forty-first session begins Sept. 19, 1916, and ends May 3, 1917.

TEXAS

Texas, population 4,343,710, has three medical colleges. The University of Texas Department of Medicine is located at Galveston, a city of 41,076 inhabitants. The Fort Worth School of Medicine is at Fort Worth, population 99,528. The Baylor University College of Medicine is located in Dallas, population 118,482.

To be eligible for a license to practice medicine in Texas, students matriculating in the session of 1914-15 and thereafter must have completed a year of collegiate work including courses of physics, chemistry, biology and a modern language, in addition to a standard four-year high school course before entering on the study of medicine.

Dallas

BAYLOR UNIVERSITY COLLEGE OF MEDICINE, 720 College Avenue.—Organized in 1900 as the University of Dallas Medical Department. In 1903 it took its present name and became the Medical Department of Baylor University at Waco. It acquired the charter of Dallas Medical College in 1904. The first class graduated in 1901. The faculty numbers 54. Entrance requirement is one year of college work in addition to a four-year high school education. The course is four years of eight months each. The fees are $115 each year; matriculation fee of $5, paid but once; graduation fee, $25. The Dean is Dr. E. H. Cary. Total registration for 1915-16 was 59; graduates, 25. The seventeenth session begins Oct. 2, 1916, and ends May 31, 1917.

Fort Worth

FORT WORTH SCHOOL OF MEDICINE, Medical Department of Texas Christian University, Calhoun and Fifth Streets.—Organized in 1894 as the Fort Worth School of Medicine. It was the Medical Department of the Fort Worth University until 1911, when it became affiliated with Texas Christian University. The first class graduated in 1895. The Dean is Dr. Samuel A. Woodward. The total registration for 1915-16 was 50; graduates 7. The twenty-third session begins Sept. 18, 1916, and ends June 7, 1917.

Galveston

UNIVERSITY OF TEXAS DEPARTMENT OF MEDICINE, on the Strand, between Ninth and Tenth Streets.—Organized in 1891. The first class graduated in 1892. It has a faculty of 16 professors and 16 lecturers, a total of 32. The curriculum embraces four years of eight months each. The entrance requirement is one year of collegiate work in addition to a four-year high school education. This requirement will be increased to *two years* of college work in and after the session of 1917-18. The total fees for the four years, respectively, are $60, $30, $15 and $10. The Dean is Dr. William S. Carter. Total registration for 1915-16 was 215, graduates, 35. The twenty-sixth session begins Oct. 1, 1916, and ends May 31, 1917.

UTAH

Utah, population 424,300, has one medical college, the School of Medicine of the University of Utah, situated at Salt Lake City, which has 113,567 people.

To be eligible to secure licenses to practice medicine in Utah, students matriculating in and after the session of 1912-13, in addition to a four-year high school education, must have completed at least one year of collegiate work prior to beginning the study of medicine, this preliminary college work to have included college courses in physics, chemistry and biology.

Salt Lake City

UNIVERSITY OF UTAH SCHOOL OF MEDICINE.—Organized in 1906. Gives only first two years of medical course. Each course covers thirty-six weeks. *Two years* of collegiate work are required for admission. The medical faculty consists of 10 professors and 12 lecturers and assistants, a total of 22. The fees are $70 each year for residents, and $95 each year for non-residents. The Dean is Dr. Perry G. Snow. Total registration for 1915-16 was 23. The tenth session begins Sept. 18, 1916, and ends June 7, 1917.

VERMONT

Vermont, population 362,452, has one medical school, located at Burlington, a town of 21,432 people.

Students matriculating in and after the session of 1912-13 who desire to practice medicine in Vermont must have obtained a preliminary training of at least one year of collegiate work in addition to a standard four-year high school education, this additional year's work to include college courses in physics, chemistry and biology.

Burlington

UNIVERSITY OF VERMONT COLLEGE OF MEDICINE, Pearl Street, College Park.—Organized with complete course in 1822. Classes graduated in 1823 to 1836, inclusive, when the school was suspended. It was reorganized in 1853 and classes were graduated in 1854 and in all subsequent years. The faculty numbers 45. One year of college work in addition to a four-year high school education is required for admission. The course of study covers four years of nine months each. The total fees for each of the first three years are $145, and $170 for the fourth year. The Dean is Dr. H. C. Tinkham. The total registration for 1915-16 was 76; graduates, 13. The next session begins Sept. 27, 1916, and ends June 27, 1917.

VIRGINIA

Virginia, population 2,171,014, has two medical colleges, one the Department of Medicine of the University of Virginia, situated in Charlottesville, population 6,765, and the Medical College of Virginia at Richmond, population 154,674.

Only graduates of medical colleges registered by the Virginia State Board of Medical Examiners are eligible to obtain licenses to practice medicine in this state. Medical colleges to be so registered must require of all students admitted in the session of 1914-15, completion of at least one year, and in the session of 1917-18 and thereafter *two years* of collegiate work including courses in physics, chemistry, biology and a modern language, preferably German, in addition to a four-year high school education.

Charlottesville

UNIVERSITY OF VIRGINIA DEPARTMENT OF MEDICINE.—Organized in 1827. Classes were graduated in 1828 and in all subsequent years except 1865. It has a faculty of 15 professors and 20 lecturers, instructors, assistants, etc., a total of 35. The requirements for admission are the completion of a four-year high school course, or its equivalent, and a year of college work devoted to chemistry, physics and biology. In 1917 and thereafter *two years* of preliminary college preparation will be required for admission, including the specified sciences and French or German. Total fees each year are $140; matriculation fee, $10. The Dean is Dr. Theodore Hough. The total registration for 1915-16 was 114; graduates, 21. The eighty-eighth session begins Sept. 4, 1916, and ends June 13, 1917.

Richmond

MEDICAL COLLEGE OF VIRGINIA, Marshall and College Streets.—Organized in 1838 as the Medical Department of Hampden Sydney College. Present title was taken in 1854. In 1913 the University College of Medicine was merged. In 1914 the North Carolina Medical College was merged. Classes were graduated in 1840 and in all subsequent years. It has a faculty of 45 professors and 88 lecturers, instructors, etc., a total of 133. The requirement for admission is a four-year high school education and in addition *two years* of collegiate work, including courses in physics, chemistry, biology and French or German. The course embraces four years of eight months each. Fees, $164 for the first year and $144 for each subsequent year; graduation fee, $30. The Dean is Dr. Stuart McGuire. The total registration for 1915-16 was 296; graduates, 91, including 30 students of the North Carolina Medical College and 8 who were granted degrees by the latter. The eighty-eighth session begins Sept. 20, 1916, and ends June 5, 1917.

WEST VIRGINIA

West Virginia, population 1,359,474, has one medical college, the School of Medicine of West Virginia University, which offers the first two years of the medical course. It is located at Morgantown, a city of 12,974 population.

Morgantown

West Virginia University School of Medicine.—Organized in 1902, and gives only the first two years of the medical course. One year of work in an approved college of liberal arts is required for admission. In 1917 and thereafter *two years* of college work will be required for admission and the Bachelor's degree will be granted to those who finish the two years in medicine. Session extends through nine months. The faculty numbers 11. Fees: For residents of the state, $25 each year; for nonresidents, $50. The Dean is Dr. John N. Simpson. The total registration for 1915-16 was 17. The next session begins Sept. 18, 1916, and ends June 13, 1917.

WISCONSIN

Wisconsin, population 2,473,533, has two medical colleges, the Medical School of the University of Wisconsin, which teaches the first two years of the medical course, and is located at Madison, a city of 30,084 people, and the Marquette University School of Medicine, located at Milwaukee, a city of 428,062 people.

To be eligible for licenses to practice medicine in Wisconsin, students matriculating in and after the session of 1915-16, prior to entering a medical school must have completed, besides a four-year high school course, *two years* of collegiate work including courses in physics, chemistry, biology and a modern language.

Madison

University of Wisconsin Medical School.—Organized in 1907. Gives only the first two years of the medical course. For matriculation at least *two years* in a college of arts and science or an equivalent training are required, including two years of Latin, a reading knowledge of French or German, and at least a year's work in physics, chemistry and biology. It has a faculty of 14 professors and 8 lecturers, instructors, etc., a total of 22. Tuition fees: For residents of the state, $70 each year; for nonresidents, $190. The Dean is Dr. Charles R. Bardeen. The registration for 1915-16 was 101. The ninth session begins Sept. 18, 1916, and ends June 20, 1917.

Milwaukee

Marquette University School of Medicine, Fourth Street and Reservoir Avenue.—Organized in December, 1912, by the merger of the Milwaukee Medical College and the Wisconsin College of Physicians and Surgeons. It has a faculty of 16 professors and 89 assistants, instructors, etc., a total of 105. The entrance requirements include, in addition to a four-year high school education, *two years* of college work, including courses in physics, chemistry, biology and a modern language. The curriculum is for four years of thirty-four weeks each. The total fees for the four years, respectively, are $175, $170, $170 and $195. The dean is Dr. Louis F. Jermain. The registration for 1915-16 was 87; graduates, 46. The fifth session begins Sept. 18, 1916, and ends June 14, 1917.

PHILIPPINE ISLANDS

The Philippine Archipeligo, having a population (estimated 1912) of 8,460,052, has two medical colleges, the University of the Philippines College of Medicine and Surgery and the Medical Faculty of the University of St. Thomas. They are located in the city of Manila, which in 1910 had a population of 234,409.

Manila

University of the Philippines College of Medicine and Surgery, Manila.—Organized in 1907 as the Philippine Medical School, under the support of the government of the Philippine Islands. Present title in 1910. The faculty includes 30 professors and 45 lecturers, assistants, etc., a total of 75. *Two years* of collegiate work leading to the degree of Bachelor of Arts are required for admission. The course extends over five years of nine months each with an additional sixth year of intern service. The Dean is Dr. William E. Musgrave. The total registration for 1915-16 was 159; graduates, 5. The tenth session began July 1, 1916, and ends April 4, 1917.

CANADA

The Dominion of Canada has nine medical colleges, all but one of which require a five-year course, including in the first year courses in physics, chemistry and biology. This course is practically equal to that in the colleges of the United States which require one year of college work for admission, including the science courses named. None of the Canadian colleges has a minimum requirement of two years of collegiate work, or its equivalent, preliminary to or as a part of the medical course. A new medical school at Edmonton, Alberta, gives only the first two years of the medical course, or three years including the preliminary science year.

Alberta

University of Alberta, Faculty of Medicine, Edmonton.—Organized in 1913. Offers only the first three years of the five-year medical course, including the preliminary science year. The faculty numbers 15. Fees for the first year are $60; for the second and third years, each $85. The registrar is Cecil E. Race, B.A. The registration for 1915-16 was 42. The fourth session begins Sept. 30, 1916, and ends May 16, 1917.

Manitoba

Manitoba Medical College, Winnipeg.—It is the Medical Faculty of the University of Manitoba. Organized in 1883, first class graduated in 1886 and a class graduated each subsequent year. The faculty numbers 58. The fees are $155 for the first year and $150 for each subsequent year. The entire course covers five years, the first year including premedical courses in physics, chemistry and biology. The Dean is Dr. H. H. Chown, 263 Broadway, Winnipeg. Total registration for 1915-16 was 134; graduates, 19. The next session begins Sept. 20, 1916, and ends May 11, 1917.

Nova Scotia

Dalhousie University, Faculty of Medicine, Halifax, N. S.—Organized in 1867. Incorporated as the Halifax Medical College in 1875. Reorganized as an examining faculty, separate from the Halifax Medical College in 1855. In 1911, in accordance with an agreement between the Governors of Dalhousie Univcrsity and the Corporation of the Halifax Medical College, the work of the latter institution was discontinued and a full teaching faculty was established by the University. By an arrangement between Dalhousie University and the Provincial Medical Board of Nova Scotia, the final professional examinations are conducted conjointly by the University and the Board, and candidates may qualify at the same time for their academic degrees and the provincial license. First class graduated in 1872. It has a faculty of 38 professors, lecturers and demonstrators. Requires matriculation examination and a graded course of five years, including premedical courses in physics, chemistry and biology. The fees are $110 each year. Total registration for 1915-16 was 68; graduates, 12. The Secretary is Prof. D. Fraser Harris. The next session begins Sept. 13, 1916, and ends May 10, 1917.

Ontario

University of Toronto, Faculty of Medicine, Toronto.—Organized in 1843 as the Medical Faculty of King's College. Abolished in 1853. Reestablished in 1887. In 1902 it absorbed Victoria University, Medical Department, and in 1903 absorbed Trinity Medical College. The course of study covers five years of eight months each, the first year including premedical courses in physics, chemistry and biology. It has a faculty of 51 professors and 134 lecturers, associates, etc., a total of 185. The fees are $150 each year; graduation fee $20. The Secretary is Dr. A. Primrose. The total registration for 1915-16 was 527; graduates, 93. The next session begins Sept. 26, 1916, and ends June 26, 1917.

Queen's University Faculty of Medicine, Kingston.—Organized 1854, first class graduated in 1855, and a class graduated each subsequent year. The faculty was originally a department of the University, but a separation took place in 1866, when the school was conducted under the charter of the Royal College of Physicians and Surgeons at Kingston. In 1892 the school again became an integral part of Queen's University. The faculty includes 25 professors and 14 assistants, instructors, etc., a total of 39. The fees amount to $105 each year; fee for M.D., C.M. degrees, $30. The course covers five years of seven months each, the first year including premedical courses in physics, chemistry and biology. The total registration in 1915-16 was 204; graduates, 41 (including 30 who obtained the M.B. degree, and 11 the M.D. degree). The Dean is Dr. J. C. Connell. The next session begins Sept. 13, 1916, and ends April 25, 1917.

Western University, Faculty of Medicine, London.—Organized in 1881, first class graduated in 1883, and a class graduated each year subsequently. The Faculty of Medicine became an integral part of Western University in 1913. The faculty numbers 59. The course is five years of eight months each, the first year including premedical courses in physics, chemistry and biology. The total fees each year are $115; matriculation fee $5; graduation fee $25. The Dean is Dr. H. A. McCallum. Total registration for 1915-16 was 68; graduates, 16. The next session begins Oct. 2, 1916, and ends May 18, 1917.

Montreal

McGill University, Faculty of Medicine.—Founded 1824 as Montreal Medical Institution; became the Medical Faculty of McGill University in 1829; first class graduated under the university auspices in 1833. No session between 1836-39 owing to political troubles. In 1905 it absorbed the Faculty of Medicine of the University of Bishop College. The course extends over five years of eight months each, including the preliminary year devoted largely to physics, chemistry and biology. The faculty numbers 130. The total fees for the five years respectively are $174, $174, 181, $174 and $204. The total registration for 1915-16 was 317; graduates, 28. The Registrar is Dr. John W. Scane. The next session begins Oct. 1, 1916, and ends June 6, 1917.

Montreal School of Medicine and Surgery, Montreal.—Organized in 1843, incorporated in 1845. In 1891, by act of parliament, the Medical Faculty of Laval University (organized in 1878) was absorbed. Present name assumed in 1911. A class was graduated in 1843 and in each subsequent year. The faculty numbers 75. The course extends over five years, including premedical courses in physics, chemistry and biology. The total fees for the five years, respectively, are $110, $118, $126, $126 and $138. The Dean is Dr. E. P. Lachapelle. The total registration for 1915-16 was 173; graduates, 17. The next session begins Oct. 1, 1916, and ends June 30, 1917.

Quebec

Laval University Faculty of Medicine, Quebec.—The Quebec School of Medicine, organized in 1848, became in 1852 Medical Department of Laval University; first class graduated in 1855, and a class graduated each subsequent year. The faculty numbers 24. The fees are $60 each year. The course extends over five years, the first year including courses in physics, chemistry and biology. The Dean is Dr. Edwin Turcot, Quebec. Total registration for 1915-16 was 81; graduates, 10. The next session begins Sept. 14, 1916, and ends June 1, 1917.

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SATURDAY, AUGUST 19, 1916

MEDICAL EDUCATION—A SIXTEEN YEARS' SUCCESSFUL CAMPAIGN

THE JOURNAL publishes this week, for the sixteenth consecutive year, complete statistics regarding medical education in the United States. During these sixteen years there has been a most remarkable and encouraging improvement, and it seems worth while to review the measures which have brought about the excellent results.

BEGINNING OF THE CAMPAIGN

In 1900, THE JOURNAL began collecting statistics regarding medical colleges, students and graduates, and in 1901 the first Educational Number of THE JOURNAL was published. There were 159 medical colleges included in the statistics. At that time it was a matter of common knowledge that many of the colleges then existing were joint-stock corporations, conducted largely for the profit of their owners; that by many of the colleges little or no attention was paid to admission requirements, and that conditions in medical education were far from satisfactory. The medical schools with endowments, with well equipped laboratories, or with six or more salaried teachers could be counted on one hand. Sectarian medicine had reached its zenith in 1901, there being twenty-two homeopathic and ten eclectic colleges. In all colleges included in the statistics, there was an enrolment of 26,417 students, and of these, 5,444 graduated.

By the collection and publication of such data, in 1901, a beginning was made in the great campaign for the improvement of medical education. The information published provided a fixed point from which future progress could be measured. The statistics were collected and published annually for five years, however, when it became evident that, if improvements were to be made, there would need to be a permanent committee, with a permanent secretary and with adequate funds at its disposal to centralize its efforts in this particular field and persistently work for improvement, using such influence and authority as could be exerted by a voluntary organization such as is the American Medical Association, and using also the greater power of publicity, particularly that which was available through the columns of THE JOURNAL. The statistics collected and published by THE JOURNAL, therefore, showed the necessity, and led to the creation of a permanent committee of the American Medical Association — the Council on Medical Education — which, as one of its lines of work, would continue the collection and publication of these statistics. Although created in 1904, the Council did not complete its organization and employ a permanent secretary and secure fixed headquarters until in December, 1905. It had already prepared two standards of medical education, however, one referred to as "the standard now recommended"[1] and the other as "the ideal standard,"[2] and pamphlets had been issued setting forth these standards. The Council had also held its first annual conference on Medical Education which, repeated in successive years, became a powerful factor in its subsequent campaign. Another strong factor in the success of the Council's campaign was that from the beginning it had the hearty and gratifying support from the officers of a large majority of the medical colleges.

PROGRESS FROM 1906 TO 1910

By Jan. 1, 1906, permanent headquarters had been established, and the campaign by correspondence with medical colleges and licensing boards urging the adoption of the standards, had been begun. Then also was begun a careful study of medical education, and permanent files for the information were started. In 1907 the first complete list of foreign medical colleges was prepared,[3] which revealed the fact that this country alone had more medical schools than all the rest of the world. Facts regarding the histories of all medical colleges in the United States, existing and extinct, were collected. To secure more reliable information regarding the work of the various medical colleges, in 1907 and 1909, respectively, two complete tours of inspection were made, and the first two classifications prepared, the second of which was published in 1910. A special campaign was carried on in cities in which two or more weak medical colleges existed, urging that such institutions merge and in that way form one stronger institution.

By 1910, the number of medical students had been reduced from 28,142 to 21,526, the number of graduates from 5,600 to 4,440, and the number of medical colleges from 162 to 131. Meanwhile, many of the institutions had undergone a remarkable internal development: better teachers had been employed, better buildings erected, new laboratories established, and

1. This briefly urged (*a*) a four year high school education, (*b*) four years of thirty weeks each, of thirty hours per week, in a medical school, and (*c*) the passing of an examination before a state licensing board. It was urged that it be generally adopted by all medical schools by Jan. 1, 1908.

2. This standard urged (*a*) a four year high school course, (*b*) a year's work in physics, chemistry and biology, (*c*) four years in a medical school, and (*d*) a year's internship in a hospital. This was urged for adoption by Jan. 1, 1910.

3. THE JOURNAL A. M. A., Aug. 17, 1907, p. 596.

better clinical facilities secured. Furthermore, a remarkable improvement had been made in entrance standards. The number of medical colleges requiring for admission, in addition to a high school education, one year of collegiate work, had been increased from five to thirty-five, and eight state licensing boards had adopted a similar standard of preliminary education for those who were to secure licenses to practice medicine in those states. Through the inspections and other means of verifying the data collected, the information published each year in the Educational Number was verified and made more reliable. A chart[4] was published showing the educational standards of the European countries in comparison with those of the United States.

PROGRESS FROM 1910 TO 1915

During the second five-year period of the Council's work, between 1910 and 1915, the general study of medical education was continued. The information regarding medical colleges, existing and extinct, was perfected sufficiently to enable the publication of a life chart[5] by means of which, for the first time, an accurate knowledge could be had as to the number of medical colleges existing in the United States in any year since the Department of Medicine of the College of Philadelphia—now the University of Pennsylvania—was organized in 1765. To secure a better record of the history and educational qualifications of medical students, and facts regarding their promotion from class to class, a medical students' register was established. Here, again, the Council received the earnest support and a gratifying cooperation from the majority of medical colleges. Two other complete inspections of medical colleges were made, and two new classifications published.

During this second five-year period, twenty medical colleges were merged with others, and nineteen became extinct, thus further reducing the total number, from 131 to ninety-five. The number of students also was reduced, from 21,526 to 14,891, and the total number of graduates from 4,440 to 3,536. Meanwhile, the number of medical colleges which had adopted the one or two years of collegiate work for admission was increased from thirty-five (27 per cent.) to eighty-three (88 per cent.), and the number of state licensing boards holding to these higher requirements was increased from eight to twenty-eight. Not only had 88 per cent. of all medical colleges adopted the higher entrance requirements, but also, through the reliable information collected by the Council, the methods employed by each college in admitting students, and the strictness with which the standards were enforced, were known with fair accuracy. The continuous agitation for better conditions in medical education had appealed to philanthropists to such an extent that endowments for medical education had been greatly increased, and large gifts for medical buildings, new laboratories, scholarships, endowed chairs and teaching hospitals had become of frequent occurrence. The fall of 1914 witnessed the general adoption of higher entrance qualifications, namely, one or more years of college work, including courses in physics, chemistry and biology. The standard which, in 1905, had been termed "ideal" became the required minimum in 1914. At the beginning of that session, forty-three medical colleges, for the first time, began the enforcement of the higher requirements.

During 1915-1916, the further extension of this requirement of preliminary education from one to two years of collegiate work, in addition to the high school education, was urged and, in June, 1916, the Council was instructed by the House of Delegates not to retain in Class A, after Jan 1, 1918, any medical college which was not requiring for admission that standard of preliminary education. This action was by no means drastic, since the two years of college requirement has already been put into effect by forty-six medical colleges; it has also been adopted by seventeen licensing boards as the minimum standard of preliminary education of those who are to receive the license to practice medicine in those states.

THIS STANDARD TO BE PERMANENT

Coupled with its instructions to the Council regarding the requirement of two years of premedical college work, the House of Delegates adopted the statement of its reference committee on medical education that this represented the highest preliminary qualification that should be legally exacted in this country. It is evident, therefore, that the struggle by the medical colleges to reach higher entrance standards will have its fixed limit, and that their attention may hereafter be directed toward other needs, such as larger endowments, more salaried teachers and more abundant and better used clinical material.

THE EDUCATIONAL NUMBER FOR 1916

The readers of this Educational Number will doubtless share in the gratification that such marvelous improvements have been made in a brief sixteen years. In fact, the progress has far exceeded the highest expectations of those who were acquainted with the serious conditions existing at the time the campaign for improvement began. Many institutions which were conducted for the profit of their owners have been closed; the number of high grade, well equipped and well endowed medical colleges, however, has been greatly increased, and a permanent American standard of preliminary education has been established. A fixed basis has been reached on which medical education in this country can be built. In fact, it already has reached a stage which is quite satisfactory and can be referred to with something like pride. This country already has a score or more of medical schools which in every particular are equal, if not superior, to those

4. THE JOURNAL A. M. A., Aug. 20, 1910, p. 680.
5. THE JOURNAL A. M. A., Aug. 23, 1913, p. 578.

to be found in any other country. Under a continuance of the campaign for improvement, others will be added to this group, and the number of colleges conducted by those who are in the game for personal gain and who disregard reasonable educational standards are becoming fewer each year. There is a most hopeful outlook for the future.

THE ACQUIRED TOLERANCE FOR ARSENIC

The tolerance for arsenic in the form of arsenous oxid or the familiar "white arsenic," which is known to exist among arsenic-eating persons in various parts of the world, can be induced experimentally in animals by commencing with very minute doses. The phenomenon, therefore, is no longer regarded as anything peculiar to the human species or particularly unique in its manifestations. The degree of tolerance attainable is shown by the fact that Knapp administered 0.4 gm. (7 grains) of arsenous oxid to a habitual arsenic eater without inducing any obvious effect. The explanations of the establishment of a marked resistance against a substance of such high toxicity have been varied and often unconvincing. Of late there has been a tendency in some quarters to put this development of tolerance into the category of the immunity reactions which have acquired prominence in the field of bacteriologic study. The supposed evidence that the serum of animals "immunized" against arsenic contains both immunizing and antitoxic properties against this poison has been found to be invalid.[1] There is no real parallelism or analogy between the manifestations of tolerance to arsenic and immunity to bacterial invasion.

At the outset it must be understood that tolerance for arsenic has been obtained only through administration of arsenous oxid in substance by way of the mouth. The subcutaneous administration of soluble salts of arsenic apparently is not a satisfactory way of developing resistance to the poison.[2] Arsenic administered orally in the form of arsenous oxid reappears largely in the feces, only a small portion being excreted through the kidneys. In 1906 Cloetta[3] of Zürich offered an explanation of the nature of the developed tolerance for arsenic that has aroused considerable interest. He attributed it to a diminished absorption of arsenic from the alimentary tract in cases of immunity. The intestinal mucosa was assumed to become less permeable gradually so that less arsenic would actually find its way into the circulation, and thus the body would become protected against ordinary lethal doses given by way of the mouth. In this sense, it will be noted, tolerance for arsenic would be equivalent to a localized resistance in the bowel whereby the mucosa would allow less poison to traverse it. The evidence that the tolerance is not of a systemic character is seen in the fact that animals rendered resistant to enormous doses of arsenous oxid promptly succumb when a few milligrams of a soluble salt are introduced subcutaneously and thus actually enter the circulation.

A more recent examination of this subject at the Pharmacologic Institute of the University of Berlin has afforded a somewhat different interpretation of the phenomena. Joachimoglu[4] denies that the absorption of arsenic is decreased with increasing doses. It must be remembered, however, that at best only small quantities of arsenic are absorbed when the administration is in the form of arsenous oxid given in substance by way of the mouth. The first effect of arsenic in the gastro-intestinal canal is well known to be a high degree of congestion of the lining membrane, often followed by extensive destruction or deterioration of the epithelial cells. Hemorrhages are not unknown, and erosion is sometimes evident. It appears reasonable that along an alimentary surface in this degraded condition absorption can go on much more rapidly and extensively than is the case through an uninjured mucosa. What is believed by Joachimoglu to happen after repeated feeding of increasing doses of arsenic is a gradual improvement and recovery of the mucosa so that it becomes more resistant to the irritant and necrotic influence of arsenic, so far as this applies to the administration of arsenous oxid. With the restoration of the alimentary mucosa, which may thus be said to become more tolerant to the destructive action of arsenic, the exaggerated absorption of the rather insoluble poison, through a damaged membrane, leading to the rapid toxicity in acute cases, is replaced by a more normal and characteristically poor absorption of the substance.

How are these assertions to be reconciled with the statements that among those rendered tolerant the habit of eating arsenic is not deleterious? Unless arsenic fails to be absorbed to any significant extent in such individuals, as Cloetta believed, or unless, as others have contended, the tissues in general become more resistant to the toxic action of this poison, it is difficult to reconcile the existing reports. It is alleged, for example, that the Styrian arsenic-eating peasants live to old age and that no symptoms attributable to the poison have been noted. This has the ring of true immunity. Joachimoglu is inclined to extreme skepticism toward all such assertions. He points out that the statements handed down in the toxicologic literature go back to the days when the symptoms of chronic arsenical intoxication were little appreciated. Catarrhal inflammation of the respiratory tract is a characteristic of mild chronic intoxication, and hoarseness

1. Morishima, K.: Arch. internat. de pharmacod., 1900, vii, 65.
2. Compare Brouardel, G.: Etude sur l'arsenicisme, Paris, 1897.
3. Cloetta, M.: Ueber die Ursache der Angewöhnung an Arsenik, Arch. f. exper. Path. u. Pharmakol., 1906, liv, 196.
4. Joachimoglu, G.: Zur Frage der Gewöhnung an Arsenik, Arch. f. exper. Path. u. Pharmakol., 1916, xxix, 419.

appears to be widespread among arsenic eaters.[5] Cases in which the supposedly tolerant persons succumb to arsenical poisoning are not unknown. It is not at all unlikely that a careful reinvestigation of the physical condition of arsenic eaters and their medical history would reveal sufficient evidence to warrant the abandonment of the hypothesis of a general cellular immunity or tolerance to arsenic. To upset tradition, however, is not an easy task.

RELATION OF OXIDATION TO METABOLISM

The idea that respiration directly causes or regulates metabolism was abandoned by physiologists many years ago, especially as a result of the investigations of Voit and Pflüger, who by independent methods demonstrated the untenability of this view. The intake of oxygen does not cause metabolism, but on the other hand the chemical reactions going on in the organism determine the amount of oxygen to be absorbed. The combustion processes in the living body may proceed for some time quite independent of the extent to which oxygen is supplied. Even in the days of Lavoisier it was appreciated that the utilization of oxygen in the organism is not enhanced by a greatly increased supply in the respired air. The breathing of compressed air or of pure oxygen leaves the combustion processes essentially unaltered. Metabolism regulates the respiration. As Lusk has expressed it, the metabolism of the tissues, through its oxygen requirement and its carbon dioxid production, changes the condition of the blood and thereby regulates the respiration. These are distinctions of fundamental importance.[6] The relations of the products of metabolism to the activity of the respiratory mechanism and the resulting regulation of the breathing processes have often been discussed in THE JOURNAL.

The hypothesis of a deficient or defective oxidative power has often been called on to explain certain abnormal phenomena. Prior to the establishment of our present knowledge of purin metabolism, an increased output of uric acid in the urine was looked on as a sign of deficient oxidation of proteins. Sugar in the urine and the condition of diabetes were associated with impairment of oxidation. Other instances might be multiplied in which the pathologic manifestation has now been shown not to depend on any lack of oxygen in these cases. Respiration furnishes an abundance, and the element is suitably carried and distributed to the tissues. Evidently there is little if any occasion to continue to emphasize the doctrine of reduced general oxidation in the body.

It is quite another matter, however, to deny that products of incomplete oxidation never appear in the human body, or to fail to take their significance into consideration. Many of the intermediary products of metabolism may be formed without the intermediation of an oxidative stage. But our life is essentially an oxidative process in its ultimate features, and at some stage sooner or later the compounds which arise in the sequence of reactions known as metabolism must be burned up. Imperfect local oxidation is far from being a rarity. A reduced local circulation in a portion of a muscle, for example, may produce anemia of the part. Lactic acid arises, and failing to be converted into the usual oxidation products, may enter the circulation. Active tissue breakdown, combined with insufficient local oxygen supply and the consequent appearance of abnormal products is not unknown. Surely no one who recalls the well known genesis of aceto-acetic acid, betahydroxybutyric acid or lactic acid can deny that they may give rise to a transient acidosis. Normally these products do not appear in the excreta; they are oxidized in the organism to the final end-products.

The free or fanciful use of words and phrases may give rise to misconceptions in science. The appearance of protein in the urine is not due to the lack of oxidative capacity on the part of the body. Protein is not oxidizable as such in the human organism; neither is sugar or fat. Preliminary chemical changes are requisite. There is such a thing as a product of incompleted oxidation; when it makes an appearance unexpectedly, one need neither deny its mode of origin nor maintain that it is a symptom of a reduction in the total oxidative power of an organism which may nevertheless have an impaired function in some localized area.

5. Von Tschudi, J. J.: Wien. med. Wchnschr., 1853, iii, 6.
6. Lusk, Graham: The Science of Nutrition, 1909, p. 31.

Current Comment

MEDICAL ADVERTISING STANDARDS

In the Propaganda Department this week we quote an interesting communication from the editor of a country newspaper to the New York *Tribune*. The editor discusses the difficulties of the newspaper man who attempts, intelligently, to censor medical advertising. The complexity of the problem prompts him to suggest "that the newspapers of America select some responsible physician as a national censor to pass fairly and conscientiously on all copy submitted and thus to establish a uniform basis of censorship." This is not the first time that a suggestion of this sort has been made by conscientious newspaper men anxious to protect the health as well as the purse of their readers. THE JOURNAL has received not a few letters urging similar measures. But it is not THE JOURNAL'S intention at this time to discuss this interesting suggestion. What it desires to point out is the fact that medical journals are in the same position with reference to the acceptance of advertisements of proprietary remedies offered to physicians as are the newspapers in passing on "patent medicine" copy. There are few editors of medical journals who would have the temerity to consider themselves competent to determine the validity of the claims made for the various "ethical pro-

prietaries" whose advertisements are submitted to them. THE JOURNAL has for years insisted that the "ethical proprietary" problem is so broad that it calls for expert knowledge in various departments of medicine and the allied sciences — knowledge such as no editor or publisher of a medical journal could be expected to possess. Recognition of this fact brought about the creation of the Council on Pharmacy and Chemistry. In this council the medical journal editor has, what the newspaper editor so much desires, an expert body capable of passing on the merits of proprietary remedies offered to physicians. So saturated in commercialism, however, is the profession of medical journalism, that we find only a comparatively few medical journals — chiefly those owned and controlled by the profession itself — that take advantage of the expert knowledge brought to bear on the proprietary question through the Council on Pharmacy and Chemistry. It is a deplorable fact that the advertising standards of most privately owned medical journals are much below those of the average high-grade lay magazine. This condition of affairs will continue until the medical profession demands a "clean-up." Whether that demand will come spontaneously, through an awakened professional conscience, or will be wrung from the profession by indignant public opinion remains to be seen. But the change is coming, inevitably.

ANXIETY BECAUSE OF CHANGES IN MEDICAL EDUCATION

Since the campaign for the improvement of medical education began in this country, alarm has been expressed by several individuals because of certain possible results of the campaign. Some have worried lest the marked reduction in the number of medical colleges would lead to a dearth of physicians in the United States. Others have noticed the greatly increased cost of medical education, and the moderately increased charges for tuition, and are afraid lest only the "sons of the rich" will be able to secure a medical education, which, they say, will result in a "medical aristocracy." Others show much concern lest the higher standards for admission and the demise of numerous low standard colleges will take away all opportunities from "the poor boy" who wants to get a medical education. Still others have laid stress on the thinly populated and rural districts which, they reiterate, are "greatly in need of doctors." These statements have been made mostly by persons interested in the continuance of low standard colleges. Some, however, have been made by those having no interest in such schools and who are evidently sincere in their expressions of anxiety. There are, indeed, fewer colleges, students and graduates; the cost of a medical education has been greatly increased; there has been also a moderate increase in the charges for tuition; entrance requirements have been raised and a lot of inferior medical colleges have ceased to exist. It is also granted that rural communities do not have many doctors living in them. A right interpretation of these facts will show that there is no cause for alarm. On the contrary, great benefits have been derived from the campaign for an improved medical education. The chief result is that physicians are being turned out who are better able to serve the public both in urban and in rural communities.

NO DEARTH OF PHYSICIANS

The decided reduction in the number of medical colleges, students and graduates, as a result of the campaign for improvement in medical education, was fully expected. In 1904 this country had 166 — many more than were needed. The use of paid solicitors and the shrewd methods of advertising used by many colleges, and the absence or nonenforcement of entrance requirements, naturally resulted in an enormous enrolment of students. The annual output of physicians was correspondingly large. What was needed was a larger proportion of high grade and well equipped medical schools, and this was the result obtained. Instead of 28,000 medical students and nearly 6,000 graduates each year, only 6 per cent. being from high standard colleges, there are now only about half those numbers; but 80 per cent. of them are in high standard colleges. Even if the output of physicians should be entirely discontinued, there would be no danger of a dearth of physicians for years to come. Figures published recently[1] show that the country still has an abundant supply. There is one physician to every 691 people in the United States, as compared with 1 to every 1,940 in Germany; 1 to every 2,120 in Austria, and 1 to every 2,834 in France, that is, referring to conditions before the war. Instead of cause for anxiety, the reduction in the number of medical colleges and graduates represents a decided improvement. Of the ninety-five medical colleges which remain, the great majority have higher and better enforced entrance requirements; they have stronger staffs of salaried and expert teachers; they have more and better equipped laboratories, and have more abundant and better used clinical facilities. Physicians coming from these medical schools are better fitted to care for the sick, and to do a larger part in the prevention of disease, than the average of those graduated under former conditions.

NO DANGER OF A MEDICAL ARISTOCRACY

The cost of medical education has been greatly increased. The larger number of laboratories, equipped with expensive and technical apparatus which the modern school now possesses, the score of skilled, salaried teachers who devote their entire time to teaching and research, and the greatly increased cost of administration have increased manyfold the cost of conducting a medical school. At present, therefore, as shown in a recent report,[2] the average cost of teaching a student in eighty-two medical colleges was $419

1. Proportion of Physicians to Population, THE JOURNAL A. M. A., May 27, 1916, p. 1736.
2. Finances of Medical Schools, THE JOURNAL A. M. A., April 8, 1916, p. 1115. Tuition Fees and the Cost of Teaching Medicine, Current Comment, May 27, 1916, p. 1707.

per year, as compared with $150, the average amount received from each student in fees. Although the cost has advanced from the point at which there were large profits for those owning the medical schools, to the present situation, where it exceeds the income from students' fees by 280 per cent., during the same fifteen years tuition fees have been increased by only 25 per cent. In eight of the state university medical schools, the fees are very low — less than $100. The excess of expenditure over income from tuition fees, of course, has been met by state appropriations or by private gifts and endowments. During the last few years the number of free scholarships for deserving but needy students has been rapidly increased, 296 having been reported last year in forty-two medical schools. There is no reason, therefore, to worry lest the greatly increased cost of medical education will result in a "medical aristocracy." It is quite evident also that the opportunities for studying medicine are not going to be "limited to the sons of the rich," but that equal opportunities are going to be open for all, regardless of their financial status.

HIGHER ENTRANCE STANDARDS AND THE POOR BOY

Several years ago the argument commonly used by those seeking to perpetuate the low standard medical college was that "the poor boy" would no longer be able to get a medical education. It is true that higher entrance requirements will keep out of the medical profession students too ignorant to master the complexities of the present day medical curriculum. The opportunities for those who can obtain the needed preliminary education but who are poor in purse, however, have really been increased. These "arguments," meanwhile, do not come from the poor boys themselves, many of whom have worked all or part of their way through our better medical schools. The deserving but poor boy is the one who usually knows a good school when he gets into it, and the one who perhaps is most capable of looking out for his own interests. Meanwhile, he knows, what has repeatedly been shown, that it costs no more in time, and sometimes much less in money, to attend a high grade medical school than it does to attend some of the poorest equipped Class C institutions. Tuition fees are lower in some high grade medical schools, particularly in those connected with state universities, than in several which are of low grade. Again, the high grade, well endowed medical school usually offers more opportunities for students' self-help than do the institutions conducted solely on students' fees — they have more need of their services and more funds with which to pay for it. Finally, it is in the well endowed institutions that the free scholarships, referred to in the preceding comment, are being so rapidly established. The present reform in medical education is, therefore, undoubtedly carrying with it the desire to put the opportunity for obtaining a thorough medical training in the reach of every person who is educationally qualified to obtain it.

BETTER MEDICAL CARE FOR RURAL COMMUNITIES

During the last few years the most common argument against the higher requirements for admission to medical schools — the "poor boy" argument having been proved to be unsound — has been the small number of physicians in rural communities. That there is, and possibly always has been, such a scarcity of physicians in these districts may be granted. It is clear, however, that this lack is not due to the increased requirements of medical schools. As pointed out by Flexner,[1] the existence during a half century of an overwhelming proportion of low standard colleges did not force practitioners to these districts. On the contrary, as pointed out by Heffron,[2] it is the persistent demand of the public for "specialists" that is driving practitioners from the rural districts. It is clear that no physician will stay in a community in which he cannot make a living. The resident of the small village who can afford to pay for medical service seldom goes to the village physician, but even boasts that he goes to "Dr. So-and-So, the famous specialist," in the city. As a rule, it is only emergency cases, or patients too poor to go to the specialist, who seek the services of the local physician. This tendency has been aided by the advent of the telephone, the automobile and improved roads, now commonly found even in rural districts. At the same time, with the better facilities for communication and travel, physicians in nearby cities have been able to triple or quadruple the radius of their practice, and this has resulted in bringing a more abundant and skilled medical care within the reach of rural communities. It is safe to state that the average rural district has never had as adequate medical care as at the present time. Even where the contrary may still be true, the providing of such service will not be brought about by the continuance of low standard medical schools. If mining districts and sparsely settled communities, in which physicians cannot ordinarily make a livelihood, are to obtain adequate medical service, it will be necessary for salaried medical officers to be sent there, either by national or by state governments. And the people in such communities will undoubtedly have better medical service if these officers have been trained in high grade medical schools.

SCIENTIFIC PRIORITY

Seldom does the true scientist urge a claim for priority in any discovery he may make; the pseudoscientist does. This is especially true in medicine. As soon as any new fact is demonstrated or an original theory advanced, some one will want to rush into print with unconvincing proof that he originally had the same idea months or years previously. Schuster,[3] in his presidential address to the British Association for the

1. Medical Education in the United States and Canada, Bull. 4, Carnegie Foundation for the Advancement of Teaching, p. 15.
2. A Review of the Tendencies in the Practice of Medicine, Jour. Social. Med., April, 1916, p. 61.
3. Schuster, A.: The Common Aims of Science and Humanity, Tr. Brit. Assn. for the Advancement of Science, 1916, p. 3.

Advancement of Science, has well stated the psychology of such claims:

New ideas may float across our consciousness, but selecting the wrong ones for more detailed study, we waste our time fruitlessly. We are bewildered by the multitude of roads which open out before us, and like Poincaré when he tries to play chess, lose the game because we make the wrong move. Do we not all remember how, after the announcement of a new fact or generalization, there are always many who claim to have had, and perhaps vaguely expressed the same idea? They put it down to bad luck that they had not pursued it, but they have failed precisely in what, according to Poincaré, is the essence of inventive power. It may be bad luck not to have had a good idea, but to have had it and failed to appreciate its importance is downright incapacity.

Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST; SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

GEORGIA

Personal.—Dr. John A. White, Augusta, has been elected health commissioner of Dougherty County.——Dr. Henry F. Harris, Atlanta, plans to go to Italy at the close of the European War and devote himself to the study of pellagra.

Hospital News.—Mrs. Harry K. Gairdner, Elberton, has offered a building and site for a hospital to the city of Elberton on the condition that the city equip and maintain it for hospital purposes. The building and grounds are valued at about $10,000.

Premedical Course.—A bill has been introduced in the Georgia legislature which requires two years of a college course as a preliminary requirement for admission to any medical school in the state. The bill also provides that there shall be no appeal from the decision of the Board of Medical Examiners as regards the revocation of a license to practice medicine.

ILLINOIS

Black Entertains Medical Society.—The Morgan-Cass County Medical Society held its annual picnic at the farm of Dr. Carl E. Black, in Cass County, August 17. The special guests of the occasion were Dr. and Mrs. William J. Mayo, Rochester, Minn. Dr. Mayo made an address on "Surgical Treatment of Stone in the Kidney." Dr. William F. Braasch, Rochester, Minn., spoke on "Clinical Observations of Stone in the Kidney." The members of the Central Illinois Clinical Surgical Association were also guests of the society and took part in the proceedings.

IOWA

New Hospitals.—The plans for the John McDonald Hospital, to be erected in Monticello, were let August 3. The building is to be 138 feet long and 48 feet wide and the site covers 4 acres of land. The building will be three stories and basement in height and will be ready for occupancy January 1. ——Excavations have commenced for the new Atlantic Hospital.

Personal.—Dr. Donald Macrae, Jr., Council Bluffs, has been made chief surgeon of the Iowa Brigade on duty at Brownsville, Texas.——Dr. Arthur A. Griffis, Tipton, who has been ill with septicemia in a hospital in Iowa City, has recovered and returned home.——Dr. John P. Savage has been elected head of the safety division of the Health Association of Sioux City and Woodbury County.

Work of State Board Laboratories.—According to reports submitted by Dr. Henry Albert, director of laboratories for the state board of health, Iowa City, 40,486 examinations and preventive treatments were given in the laboratories during the last two years. During the last fiscal year, 25,795 examinations were made. Of the examinations made in the biennium, 18,597 were for diphtheria; 4,372 for typhoid fever; 6,681 for tuberculosis; 146 for rabies and 1,221 specimens of water were analyzed. During the same period, ninety-six persons received the pasteur treatment.

MARYLAND

Personal.—Dr. James J. Mills, Baltimore, sailed for France on the *Rochambeau*, August 5, for war service with the French army.——Dr. Howard Bratton, Elkton, has been appointed division physician for the Pennsylvania System during the absence of Dr. Henry A. Mitchell, chief surgeon of the First Infantry, Maryland National Guard, who is now on the Texas border.——Drs. Howard A. Kelly and Thomas S. Cullen, Baltimore, are spending the summer near Magnetawan, Ont.——Dr. C. Howard Moses, Baltimore, has been appointed chief resident surgeon of the Youngstown (Ohio) City Hospital.

Quarantine Is Established.—Carrying out a resolution adopted at a special meeting of the Board of Public Safety authorizing him to take steps to protect the city against infantile paralysis, Health Commissioner John D. Blake will prohibit children under 12 years of age from attending moving picture theaters. He also will establish a quarantine against children from New York, Philadelphia and the Jersey coast. The meeting was held at the instance of Mayor Preston, who told the commissioner of health to call in experts if necessary, and the situation was discussed with Drs. John S. Fulton, C. Hampson Jones and William W. Ford of the state department of health, Dr. C. Frank Jones, acting assistant commissioner of health, and J. W. Mehling, assistant secretary of the Mechanics and Manufacturers' Association. Dr. Ford has just returned from the New Jersey coast and New York. He detailed conditions there and also in Philadelphia. In behalf of his association Mr. Mehling talked against the adoption of such drastic measures as would affect the business interests of the city. Whether to act at once or await developments occupied the attention of the board and its conferences for some little time. Conditions in other places were reported as being bad, and on the theory that "an ounce of prevention is worth a pound of cure," it was decided to act at once. Consequently a resolution was adopted recommending that the commissioner of health take such action as he, in his opinion, thinks necessary, in order to protect the health of the city, and if necessary put in operation quarantine. Dr. Blake announced that his order dealing with moving picture theaters probably would go out today. It will not apply to Sunday schools, churches or other places where children congregate, because atmospheric conditions are not considered as dangerous as in crowded "movie halls." Nor will children be prevented from going to the parks or squares, or other outdoor places of amusement.

NEW YORK

Personal.—Dr. Albert Warren Ferris, formerly the medical expert and "Kur-Direktor" for the commissioners of the state reservation at Saratoga Springs, has gone into practice in that city. No physician is officially connected with the state control of the springs or bath houses.

Cleanup in Nassau County.—There have been 175 cases of infantile paralysis reported from Nassau County, a number of cases occurring on the estates of wealthy residents of the Long Island summer colonies. This has led to a determination to have a thorough cleanup. A subscription of $40,000 has been raised by the wealthy residents of the county and the work has been inaugurated by deputy state health commissioner, Dr. Linsey R. Williams, Dr. George Draper of the Rockefeller Institute, and a staff of six physicians. Two new isolation hospitals have been opened, one at Hickville and another at Roslyn.

State Health Department and Infantile Paralysis.—Officials of the state health department have completed a list of fairs and meetings at which attendance of children less than 16 years of age will be forbidden and instructions have been given to health officers that these orders be strictly enforced. Plans to hold conferences in the districts in which infantile paralysis has broken out have been completed. The first of these conferences took place at Kingston, August 14, at which time Dr. Henry L. K. Shaw, Albany, instructed health officers on the various phases of infantile paralysis. Dr. Fred M. Meader, Albany, director of the division of communicable diseases of the state department of health, is reported as expressing the opinion that upstate health officers were holding their own in the fight and preventing the disease from spreading. Up to August 12 there have been 895 cases in the state, the largest number of cases reported thus far on one day being 60 cases on August 11.

Psychopathic Clinic at Sing Sing Prison.—The first psychopathic clinic in a state prison began its work at Sing Sing

on the return of Warden Thomas Mott Osborne. The clinic is in charge of Dr. Bernard Glueck, formerly a member of the staff of the Government Hospital for the Insane, Washington, who has made a special study of mental factors in crime and delinquency and who will devote his entire time to the work and will be supplied with well trained assistants. At Sing Sing during the last three years, one in forty-five of the prison population have been transferred to the Dannemora State Hospital for the Insane, whereas the admission rate in other hospitals for the insane among the adult male population of the state was only one in 320. Each of the prisoners will be given a very careful mental examination and the clinic will be at all times at the service of the prison in dealing with mental factors requiring attention. The funds which make this clinic available have been contributed by the Rockefeller Foundation to the National Committee for Mental Hygiene and will be under the immediate supervision of an advisory board of that committee which will consist of Drs. August Hoch, director of the New York Psychiatric Institute; Dr. William Mabon, medical director and superintendent of the Manhattan State Hospital and formerly president of the New York State Lunacy Commission; Dr. William L. Russell, superintendent of Bloomingdale Hospital; Dr. George H. Kirby, clinical director of the Manhattan State Hospital; Dr. L. Pierce Clark, consulting physician for the State Hospital for the Feeble-Minded, Randall's Island; and Dr. Thomas W. Salmon, medical director of the National Committee for Mental Hygiene. The establishment of the psychopathic clinic is the first step in the organization of an efficient medical service to insure the most careful examination and treatment of every prisoner. By this means it will be possible to correct many correctable defects and greatly to improve the mental and physical standard among prisoners.

New York City

Personal.—Dr. Isham G. Harris, formerly superintendent of the Mohansic State Hospital, has been appointed superintendent of the Brooklyn State Hospital, to succeed Dr. Elbert M. Somers, who resigned, August 1.——Dr. Le Roy B. Vail of Flushing, L. I., was removed to the Queensborough Hospital for Contagious Diseases on August 11, suffering from infantile paralysis.

Infantile Paralysis Brace Fund.—Dr. Haven Emerson's request for a fund of $15,000 for the purpose of providing braces and orthopedic appliances for the victims of infantile paralysis has met with a ready response. Among the larger contributions are $1,000 from Jacob H. Schiff, $1,000 from Cleveland H. Dodge, $500 from Mrs. Hugh H. Thompson, and a large number of smaller contributions.

The Infantile Paralysis Epidemic.—The total number of cases of infantile paralysis reported to the health department, including August 12, is 6,140 and the total number of deaths 1,371. There was a slight falling off in the number of cases reported and in the number of deaths with the break in the hot spell. It has been observed that more children die of the disease on hot days than on the cooler days. It has been announced that thirty-three nurses provided by several cooperating charitable organizations will begin on August 14 making a biweekly house-to-house canvass in two districts of the city—the lower east side of Manhattan and the Central Avenue district of Brooklyn—districts in which the disease has been the most prevalent.——The results obtained from the use of the blood serum of convalescent patients in the treatment of those ill with the disease are said to justify a further extension of this method. The health department will make efforts to extend its use.——The governors of the New York Hospital opened a branch for infantile paralysis cases on August 11, in the old hospital buildings of the New York Orthopedic Hospital at 126 East Fifty-Ninth Street. About 100 patients can be accommodated at the new hospital. It is announced that the same precautions which were taken to prevent New York children exposed to contagion from leaving the city and spreading the disease in rural districts will be taken to prevent children who have been exposed to infantile paralysis in the country from bringing it back to untainted apartment houses and tenements. Regulations governing the return of children who have had the disease in the country are now under consideration. It is thought now that federal authorities will not allow such children to return until after a month's quarantine.

OHIO

Personal.—Dr. William H. Pritchard, Gallipolis, has been appointed superintendent of the Columbus State Hospital, Columbus, succeeding Dr. Charles F. Gilliam, recently deceased.——Dr. Edmund R. Brush, Zanesville, who has been on duty at Columbus Barracks during the mobilization, has been released and ordered to return to his home.——Mrs. Maranda M. Walker, the wife of Dr. Alonzo B. Walker, Canton, died suddenly from cerebral hemorrhage, July 10.——Dr. Kenneth A. Clouse and Colonel Thurman R. Fletcher, Columbus, and Dr. Edward D. Harper, Guysville, have been certified for appointment to the position of first assistant medical examiner for state institutions by the State Civil Service Commission.——Prof. George Neil Stewart, Cleveland, director of the Cushing Laboratory of Experimental Medicine, Western Reserve University, sailed for Europe, July 22.——Dr. Paul J. Hanzlik, Cleveland, associate in pharmacology, Western Reserve University, gave a lecture, July 6, in the Graduate School in Medical Sciences, University of Illinois, Chicago, on "The Behavior of Salicylate in the Body."——Dr. Arthur A. Eisenberg, formerly pathologic anatomist in U. S. Army Medical Museum and School, Washington, D. C., has been appointed pathologist at Charity Hospital, Cleveland.——Dr. J. J. John has been appointed pathologist to the new St. John's Hospital.

Cincinnati

Lloyd Museum.—Mr. Curtis G. Lloyd, one of the founders of the Lloyd Library and Museum, will put up a new building for the institution at Court and Plum streets. The building will be connected with the present museum.

Permit for New Medical College.—Application for a permit to erect a new medical college building on the new city hospital site has been made by the medical college building commission. The building will have a frontage of 298 feet and will have three wings, the center containing an auditorium. The estimated cost of the buildings is $250,000.

Personal.—Dr. William A. Gardner has resigned as district physician.——Dr. Edward W. Walker has been appointed a member of the Municipal Board of Health, succeeding Dr. Samuel E. Allen.——Dr. Augustus Ravogli has been commissioned first lieutenant, M. R. C., U. S. Army.——Dr. Dudley Webb has been selected as junior staff surgeon on the genito-urinary service of the General Hospital.——Capt. John D. Spelman, First Ohio Field Hospital, has been ordered to Columbus to take charge of the medical supply depot on the staff of Lieut.-Col. Joseph A. Hall.

PENNSYLVANIA

Infantile Paralysis.—New cases of the disease have been reported from Bristol, Lebanon, Myerstown, Darby, Ursina, Millville, Danville, Middletown, Barnesboro, Hazelton, Claysville and Shade Township in Somerset County. There was a total of 273 cases reported in the state up to midnight, August 12.——Five of the seventeen state health officers for Lancaster County have been detailed by Dr. Samuel G. Dixon, state health commissioners for service on the borders in connection with efforts to stop the spread of the epidemic. ——The Bucks County Medical Society will devote an entire day to a conference for the purpose of studying the various aspects of this disease and have indorsed a resolution calling for complete cooperation with the state authorities in the campaign against the epidemic.

Philadelphia

Medico-Chi Buildings and School to Remain.—Students of the Medico-Chirurgical College will not go to the University of Pennsylvania for their medical course in the coming college year as it has developed that the university is hampered for equipment and classrooms. Another problem that is facing the cooperating committees representing the two institutions in the merger is the disposition of the buildings of the present Medico-Chirurgical College. The hospital of the institution, built several years ago at the corner of Eighteenth and Cherry streets, will be the only building of the institution left intact when the Parkway is cut through. The amphitheater, one of the finest in the country, will lose one corner. Director Datesman of public works gave Dr. Edward B. Gleason, professor of eye, ear, nose and throat disease at the college the assurance that the city will be as lenient as possible and that no demolition will be started until the end of the college year.

Infantile Paralysis.—On August 12, the quarantine period for infantile paralysis was changed from twenty-one days to thirty days by special action of the advisory board of the state department of health. This action followed two deaths

and the development of a third case in one block in Philadelphia. This was on Addison Street, between Fifty-Sixth and Fifty-Seventh streets, where guards were placed at each end of the square in addition to those placed at the front and rear of the houses infected by the plague. The advisory board recommended that the commissioner of health communicate with the authorities of cities of other states and arrange for exchange of health certificates whenever such a reciprocal agreement may be deemed necessary. A regulation was also laid down that no shipment of second-hand furniture or household goods will be received in Pennsylvania unless accompanied by a certificate showing that it has not come from a house where infantile paralysis existed. Members of the advisory board were Drs. Charles B. Penrose, Philadelphia; Adolph Koenig, Pittsburgh; Daniel P. Gerberich, Lebanon; Edgar M. Green, Easton, and Samuel G. Dixon. The toll for August 12, in this city was five deaths with ten new cases reported.——The Philadelphia Pediatric Society has made an appeal to wealthy residents for funds to equip and operate a laboratory for the study of this disease and a pathologist whose name is as yet withheld has offered his services free. The committee in charge of tlfe project is headed by Dr. William N. Bradley and is composed of Drs. William B. Dorwarth, Charles A. Fife, A. Graeme Mitchell, Alice W. Tallant, William Hewson, Henry D. Jump and Walter S. Cornell.——Twelve additional sanitation inspectors have been appointed by Director of Health Krusen to make immediate examination of back yards and cesspools and they have been given police power authorizing them to make arrests in case of flagrant violation of the sanitation laws.——The different branches of the Philadelphia County Medical Society held meetings on infantile paralysis during the week of August 14 to 21.

CANADA

Provisional Lieutenants in the Canadian Army Medical Corps.—A large number of doctors in the Toronto military district have passed the examinations of the Army Medical Corps and have become provisional lieutenants.

Beland Still a Prisoner.—The latest news of the former postmaster general of Canada, the Hon. Dr. Henri S. Beland, St. Joseph de Beauce, Que., is that he is still a prisoner in Germany. There have been repeated negotiations to secure his release, but so far without avail. He was allowed to go to visit his wife who was ill in Holland, but had to return.

Personal.—Drs. William Spankie, Wolfe Island, and Herbert S. Griffin, Hamilton, have been appointed by the Ontario Medical Council as their representatives on the Dominion Medical Council.——Dr. H. C. Hazelwood, Toronto, has been appointed medical officer of the One Hundred and Seventy-Sixth Battalion with the rank of lieutenant.——Dr. Peter McGibbon, Bracebridge, Ont., who has been on active service, has received the military cross for distinguished conduct on the field.

Hospital News.—Buxton Hospital, England, was formally opened, August 11. Surg.-Gen. Carleton Jones accepted the hospital as a unit of the Canadian Medical Services. The institution will be under the administration of Maj. Frederick Guest, St. Thomas, Ont. One of its special features will be the treatment of troubles arising through shell shock; rheumatic complaints will also have special treatment. The hospital was established by the Canadian Red Cross.——The Ontario Military Hospital, Orpington, Kent County, England, has been formally taken over by the Canadian Militia Department, and the following have been constituted a board to carry out the transfer: Colonel Bridges, inspector of Canadian hospitals in England, Captain Monks and Captain Carson. ——The Hon. Dr. Robert A. Pyne, Toronto, and Premier Hearst of Ontario have gone to England to see if any further aid can be given by the province toward the Ontario Military Hospital at Orpington.——At a recent meeting of the Calgary Hospitals Board a discussion took place whether the public wards of the General Hospital should be made free to the residents of Calgary. It was contended that the financial loss by such arrangement would not amount to over $10,000 per annum; and that free wards would offer better accommodation and peace of mind to those unable to pay. The medical profession opposed any such arrangement. The following resolution was adopted: "That in the opinion of this board the present financial conditions existing render it inadvisable and practically impossible to impose any further burden on the taxpayers of the city of Calgary by making free the public wards of the Calgary General Hospital."

GENERAL

Army Medical Corps Officers Needed.—The surgeon-general of the army announces that preliminary examinations for appointment of first lieutenants in the Army Medical Corps will be held on Sept. 5, 1916. Full information concerning these examinations can be procured on application to the Surgeon-General, U. S. Army, Washington, D. C.

Bequests and Donations—The following bequests and donations have recently been announced:

Allentown (Pa.) Hospital, a donation of $50,000, from Mrs. Sarah C. Hunsberger, Allentown.

Mercersburg (Pa.) Academy, donation of $3,000 from T. E. Houstin, Cincinnati, and $1,000 from George A. Wood, Chambersburg, Pa., to increase the facilities of the school infirmary.

To found a school for motherhood at Detroit, $1,000,000, by the will of Mrs. Lizzie Merrill Palmer, Detroit.

Mount Sinai Hospital, New York City, $2,500, by the will of Matilda Davis.

Lincoln Hospital, for colored patients, Durham, N. C., funds for the equipment of the tuberculosis ward, donated by George W. Watts and W. A. Erwin.

Medical Reserve Corps Legislation.—A bill introduced in Congress by Mr. Gandy (H. R. 17125) contains the following provision: That in increasing the Medical Corps of the Army as provided in the National Defense Act, approved June 3, 1916, the officers of the Medical Reserve Corps on active duty, irrespective of age and subject to the physical examination now required by law, whose services have been satisfactory and who have been in the military service for at least five years, including contract service, volunteer service and enlisted service, shall be, and are hereby, transferred to the Medical Corps of the Army, with the rank of captains, to take relative rank in accordance with the length of their respective services, but next below all captains, Medical Corps, holding that grade at the time of the passage of this act.——There are about fifty officers of the Medical Reserve Corps on active duty who have been in the service since 1898.——The National Defense Act,. approved June 3, 1916, reads in part as follows: "One year after the passage of this act the Medical Reserve Corps, as now constituted by law, shall cease to exist."

National Child Labor Bill Passed by the Senate.—Under pressure from the president, the Senate, on August 8, passed the National Child Labor Bill (H. R. 8234). This bill passed the House on Feb. 2, 1916, but the Senate amendments were so radical, making the bill much more drastic, that it has been sent to conference. As it now stands the bill excludes from interstate or foreign commerce any product of any mine or quarry in which children under 16 years of age have been employed and any product of any cannery, mill, workshop, factory or manufacturing establishment in which children under 14 years of age have been permitted to work at any hours whatsoever, or in which children between 14 and 16 years of age have been permitted to work more than eight hours in any one day, or more than six days in any one week, or after 7 o'clock p. m., or before 6 o'clock a. m. The fact that the particular product to be shipped is not the product of child labor is immaterial; it is sufficient that it was produced by an establishment in which children within the defined age periods are employed for any purpose whatsoever. Dealers other than the producers are liable to the penalties of the proposed law unless they have protected themselves by guarantees from the producers that the commodity has been lawfully produced and in event of any such guaranty proving false, the guarantor may be punished. "State medical inspectors" are among the local officers authorized to enforce the law, but the term is not defined. In the course of the debate on this bill, grave doubts were expressed as to its constitutionality.

OUR TROOPS ON THE BORDER

Hospital Train Starts.—The hospital train which has been built and equipped at Pullman for service between Washington, the border posts and San Francisco, started on its first trip, August 15, under the command of Capt. Howard H. Baily, M. C., U. S. Army.

Contracts Let for Field and Hospital Equipment.—Contracts for about $500,000 work of field and general hospital furniture and equipment have been awarded by Lieut.-Col. Thomas U. Raymond, M. C., U. S. Army, in charge of the Medical Supply Depot, St. Louis. The goods are to be shipped to the border.

Red Cross Units Projected.—Drs. Thad Shaw and Henry H. Ogilvie are arranging for the establishment of a hospital

unit for the management of a base hospital evacuation station in San Antonio. The national headquarters has been asked to endorse the movement and to give official instructions for the perfecting of the organization.——The city of Eagle Pass has appropriated $16,000 for a Red Cross base hospital and work has commenced on the building. The city has prepared to turn over schoolhouses or other public buildings to the government or the American Red Cross for use as hospitals in case of emergency.

WAR NOTES

American Ambulance Men Honored.—Six members of the American Field Ambulance were given honorable mention in the orders of the day of the French army, August 2. All of these are working in the Verdun region.

Red Cross Hospital Units to Be Reestablished.—Since October last the Red Cross has been vainly endeavoring to obtain permission from Great Britain to send hospital supplies to the central powers. In a communication to the State Department, dated July 28, Great Britain suggests that the American people might accomplish this end by financing American Red Cross hospital units to take the place of those which have been withdrawn from these countries, as the allied governments will permit Red Cross hospital supplies to be shipped to these reestablished units. The American Red Cross thereupon requested permission of the central powers through the State Department to reestablish one or two hospital units of six physicians and eight nurses each in each of the countries of the central powers.

LONDON LETTER

London, July 31, 1916.

The Health of Old Miners

At a general meeting of the Institution of Mining Engineers, Dr. J. S. Haldane read an important paper on the health of old miners in which he pointed out that while up to the age of 50 the death rate from lung disease is much lower among colliers than in the rest of the population, above 50 the opposite holds, and there is a marked excess of deaths from bronchitis. But the deaths from this disease have greatly diminished since 1890, for which improved ventilation seems to be the cause. Fifty years ago miners often worked in air containing so much blackdamp that lamps and candles burned dimly. In such air there is usually 2 or 3 per cent. of carbon dioxid, which enormously increases the breathing during muscular exertion. The breathing is exactly regulated so as to keep an average of about 5.6 per cent. carbon dioxid in the alveolar air; and with 3 per cent. of this gas in the air, a man breathes twice as much air, so as to keep the alveolar percentage right. A man doing moderate muscular work in pure air breathes about five or six times as much air as during rest. In air containing 3 per cent. of carbon dioxid he would be breathing ten or twelve times as much air as during rest, and his breathing would be taxed to the utmost. He would thus be much more liable to contract emphysema. The better ventilation of coal mines is largely a consequence of the greater amount of firedamp and great heat encountered as mines have become deeper.

Dr. Haldane is inclined to think that both the firedamp and the heat have indirectly caused great improvement to the health of miners. Where there is plenty of firedamp there is usually also plenty of fresh and dry air, and no harmful excess of carbon dioxid. The proportion of deaths from bronchitis among old miners was higher in Staffordshire in 1890-1892 and 1900-1902 than in any of the other coal fields; and Staffordshire mines are exceptionally subject to blackdamp. The excess in bronchitis among old coal miners has been attributed to the breathing of dust, and Dr. Haldane was previously inclined to agree with this theory. But it is difficult to see why, if dust is the cause, there has been so great a diminution in the bronchitis mortality in recent years. Coal mines have, on the whole, become drier and more dusty with increasing depth and better ventilation; and, if dust were the cause, one would have expected the bronchitis to increase, whereas it has greatly diminished. Certainly an excess in mortality from bronchitis is associated with the breathing of harmful dust. But this excess is accompanied by a far greater excess in mortality from phthisis, and begins comparatively early in life, unlike the bronchitis mortality in colliers. Experiments on animals carried out by J. M. Beattie show that both coal dust and the shale dust usually associated with it on mine roads are relatively harmless.

Further experiments on the same subject have been carried out more recently by Dr. A. Mavrogordato in Dr. Haldane's laboratory for the Medical Research Committee under the insurance act, and attention has been concentrated on the process by which dust is eliminated from the lungs. These experiments show that both coal dust and shale dust are readily eliminated by the agency of cells, which collect the dust and then wander out with it into the bronchial tubes, whence it is swept upward by the action of the ciliated epithelium which lines the air passages. This ready elimination does not occur with other dusts known to be dangerous and liable, in particular, to predispose to phthisis. The phthisis death rate among colliers is not only much lower than in nearly all other occupations, but is even lower than in the exceptionally healthy occupation of farm laborer, despite the advantages of pure air and relative segregation in the latter occupation. The low death rate from lung disease among colliers up to the age of 55 is almost entirely due to the relative immunity from phthisis, and this immunity existed in 1850 just as now. Above the age of 55 the increased bronchitis death rate in old age begins to tell heavily. Coal dust certainly does not kill germs, but it seems probable that the cells which clear out the dust particles clear out at the same time other "foreign bodies," such as tubercle bacilli. If this is so, coal dust in moderation is, on the whole, and despite explosions, an advantage to the safety of colliers. Town dwellers and smokers may also take comfort to themselves in the thought that, in introducing smoke particles into their lungs, they are educating their lung epithelium to deal with really harmful "foreign bodies." In any case the evidence does not now bear out the theory that the excessive bronchitis of old colliers is due to dust inhalation. Dr. Haldane does not think that there is any evidence in favor of the idea that the excessive bronchitis in old colliers is due to exposure to changes of temperature. Miners do not appear to take harm in this way, so far as Dr. Haldane has been able to ascertain; and, in other occupations associated with exposure to extremes of weather there is no excess of bronchitis among either young or old.

The Treatment of the Wounded in the Great Naval Battle

The medical work of the navy has been planned with a care which has been justified by results. At the beginning of the war everything was ready—hospital supplies, equipment, ships. Within four days from the declaration of war, hospital ships were fully equipped and on their way to join the grand fleet. Had a great battle occurred during those early days, it would have found this department of the navy as well prepared as all the others. When in time the battle came, the work proceeded without a hitch. During the battle of Jutland Bank the naval surgeons performed a terrible task. At first when the enemy was sighted there devolved on them the work of transferring stores and equipment from the sick bays above the armor to the fore and aft distributing stations below it. The emergency was sudden and the time short. With the closing of the armored doors the time for action was come. In their stations they heard the booming of the guns, and soon there crept down to them the fumes of the exploding charges. From that time the stations became scenes of fierce and terrible activity. In one ship smoke filled the surgeons' rooms at the moment when the stream of wounded began to flow down to them, adding suffocation to the other perils of the work. The ship reeled under pounding blows, and staggered in a difficult sea; the concussion of her guns was so great as to preclude the possibility of adequate surgical assistance. Wearing gas masks, the physicians did what they could. Another ship was holed, and had her electric light cut off. The medical station was in darkness; it was foul with the gas fumes from the enemy shells; water poured in by the holes in the vessel's sides. Here singlehanded a surgeon toiled by the light of an electric torch until he was ordered to get his wounded away because the ship was sinking. This he achieved so well that not a life was lost. Apart from the treatment of wounds, the most difficult problem was furnished by the terrible burns. These were of two kinds, those due to the ignition of cordite supplies by enemy shells—which are so severe as to amount to an instantaneous mummification—and those due to the flash of bursting shells, which are not usually severe. It is interesting to note that the eyes are not affected by these burns; the eyes are quicker than the flame, for they are able to shut before it reaches them.

Deaths

John Benjamin Murphy, M.D., Chicago; aged 58; died at Mackinac Island, Mich., August 11, from aortitis.

Dr. Murphy was born in Appleton, Wis., Dec. 21, 1857. He was reared on a farm, attended the preliminary schools and was graduated from Appleton High School in 1876, and from Rush Medical College in 1879. After serving an internship in Cook County Hospital, Dr. Murphy entered into partnership with the late Dr. Edward W. Lee. In 1882 he went to Europe where he studied for two years.

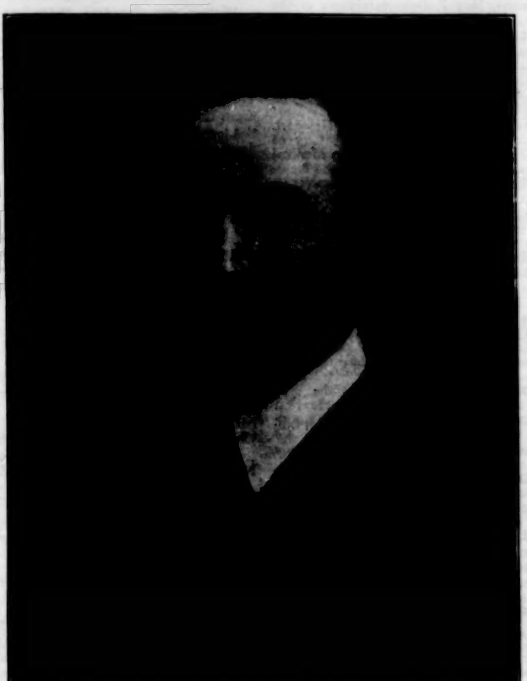
Dr. Murphy's career as a medical teacher began in 1884 when he was appointed lecturer in surgery in Rush Medical College. In 1892 he was made professor of clinical surgery in the College of Physicians and Surgeons, Chicago, holding this position until 1901, when he was elected professor of surgery in Northwestern University Medical School, and continued in that position until the time of his death, with the exception of an interregnum of three years from 1905 to 1908, during which he was professor of surgery in Rush Medical College. He was also for many years professor of surgery in the Post-Graduate Medical School, Chicago.

He became chief of the surgical staff of Mercy Hospital on March 21, 1895, and held this position until the time of his death. He was for thirty years a member of the attending or consulting staffs of Alexian Brothers Hospital and was for several years attending surgeon to Cook County Hospital, consulting surgeon to St. Joseph's and Columbus Memorial Hospitals, and the Hospital for Crippled Children, Chicago.

He was a fellow of the American Medical Association, orator in surgery in 1898 and was elected president of the Association at the St. Louis session in 1910. He had also served as president of the Clinical Congress of Surgeons of North America and of the Chicago Medical Society; was a member of the American Association of Obstetricians and Gynecologists; a fellow of the American Surgical Association; a member of the Southern Surgical and Gynecological Association; Western Surgical Association; a life member of the Deutsche Gesellschaft für Chirurgie; an honorary member of the Société de Chirurgie de Paris; an honorary fellow of the Royal College of Surgeons of England, and a member of other scientific bodies.

His contributions to the surgical literature were many. "Cholecysto-Intestinal, Gastro-Intestinal, Entero-Intestinal Anastomosis and Approximation Without Sutures" appeared in 1892. In this paper he first described the appliance commonly known as the "Murphy button." In 1897 he published the reports of his research and clinical work in suture of arteries and veins. This article was entitled "Resection of Arteries and Veins Injured in Continuity; End-to-End Suture; Experimental and Clinical Research." In the annual Oration in Surgery, delivered at the Denver meeting of the American Medical Association in 1898, his subject was "Surgery of the Lung" and in this paper he advocated the use of nitrogen gas in the production of artificial pneumothorax. His research work in neurologic surgery was published under the heading of "Surgery of the Spinal Cord" in 1907, and his most important recent work on arthroplasty was published in 1912, entitled "Contribution to the Surgery of Bones, Joints and Tendons." On Feb. 1, 1912, appeared the first issue of *Murphy's Clinics* which chronicled his operations and lectures at Mercy Hospital.

In 1902, Notre Dame University conferred on Dr. Murphy the Laetare medal. He was given the degree of LL.D. by the University of Illinois in 1905, and by the Catholic University of America in 1915, and the University of Sheffield, England, conferred on him the degree of M.Sc. in 1908. His most recent honor was given him in June of this year when the Pope made him a knight commander of the Order of St. Gregory the Great.



JOHN BENJAMIN MURPHY, M.D., 1857-1916

He had been in poor health for several months on account of aortitis, which caused him intense suffering, and had spent the early part of the summer at Wheaton, Ill. The extreme heat of the last month affected him so seriously that it was decided to take him north, and on the Monday before his death he went to Mackinac Island. Early on the morning of the day of his death he began to suffer extremely and the attacks of angina continued through the day, his death occurring suddenly at 3:30 p. m. The body was brought to Chicago and a necropsy was made which disclosed the cause of death to be aortitis. Many plaques of lime salts were found in the arch of the aorta and the thoracic and abdominal aorta, and there was pronounced coronary sclerosis.

Dr. Murphy was a man of great administrative ability and was able to associate with him, and to draw to him, young men of great promise in surgery and pathology.

When Dr. Murphy died, the medical profession lost one of the ablest surgical teachers and a clinician of the highest rank, one who had contributed much to medical and surgical science, one whose influence was world wide.

James G. Fergusson, M.D., Forfarshire, Scotland; Johns Hopkins University, Baltimore, 1914; aged 27; who immediately after graduation went to England and on the outbreak of war entered the Royal Army Medical Corps and was stationed at a base hospital for six months; afterward commissioned a subaltern in the "Black Watch"; invalided for several months on account of wounds received in battle; was killed in action while serving with the British Army in France, July 14.

Rowland Cox, Jr., M.D., Paterson, N. J.; College of Physicians and Surgeons in the City of New York; 1898; aged 44; a Fellow of the American Medical Association and New York

Academy of Medicine; clinical assistant in the Department of Surgery of the Vanderbilt Clinic; for seven years instructor in operative surgery in his alma mater; died in the New York Hospital, August 2, after an operation on the brain.

Carl V. Cole, M.D., Lake City, Minn.; University of Minnesota, College of Homeopathic Medicine, 1904; aged 39; while driving his automobile over a grade crossing of the Chicago, Milwaukee and St. Paul road, near Lake City, August 6, was struck by a train sustaining compound fractures of both legs and crushing injuries of the chest from which he died two hours later.

Angus McKay, M.D., Ingersoll, Ont.; Trinity Medical College, Toronto, Ont., 1872; F.R.C.S., L.R.C.P., Edinburgh, Scotland; aged 68; for several years surgeon in the Royal Navy; in 1886 a member of the Provincial Parliament for the South Riding of Oxford County; in 1910 and 1911 mayor of Ingersoll; died at his home, May 7, from carcinoma of the stomach.

William D. Christy, M.D., Creston, Iowa; Starling Medical College, Columbus, Ohio, 1878; aged 69; formerly a Fellow of the American Medical Association and local surgeon for the Chicago Great Western Railway; who had been ill for ten years as the result of a cerebral hemorrhage, died at his old home in Diagonal, Iowa, August 3.

Thomas Alphonso Kezefick, M.D., New York and Newport, R. I.; College of Physicians and Surgeons in the City of New York, 1885; aged 57; a Fellow of the American Medical Association; for many years attending physician to the Newport Hospital; died at the home of his brother in Lawrence, Mass., July 30.

Oric H. Paxson, M.D., Christiana, Pa.; Jefferson Medical College, 1882; aged 59; for a quarter of a century a druggist and practitioner of Christiana; died at his home, July 24, from the effects of a bullet wound of the head, self-inflicted, it is believed, with suicidal intent, while suffering from melancholia.

Edwin B. Tefft, M.D., New Rochelle, N. Y.; University of Buffalo, N. Y., 1864; a Fellow of the American Medical Association; first health officer of New Rochelle, consulting physician to the New Rochelle Hospital and at one time a member of the state board of regents; died at his home, August 6.

Martin H. Field, M.D., Indianapolis; Medical College of Ohio, Cincinnati, 1871; aged 81; physician to the Marion County Jail; for two years secretary of the Marion County Board of Health and for thirteen years physician to the State School for the Deaf; died at his home, August 7, from senile debility.

Hugh E. Lindsay, M.D., Whitewater, Wis.; Rush Medical College, 1869; aged 75; formerly a member of the State Medical Society of Wisconsin; for more than thirty years a practitioner of Whitewater; died in the Florence Wheeler Hospital in that city, July 31, from cerebral hemorrhage.

John A. Rodman, M.D., Dallas, Texas; Hospital College of Medicine, Louisville, Ky., 1875; aged 68; formerly a member of the State Medical Association of Texas; formerly local surgeon of the Missouri, Kansas and Texas Railroad at Waxahachie, Texas; died at his home, July 29.

William Chester Slough, Jr., M.D., Emaus, Pa.; Hahnemann Medical College, Philadelphia, 1869; aged 70; for several years school director, borough councilman and a member of the local board of health; died at his home, July 30, from cerebral hemorrhage.

Alvin Davis Dalbey, M.D., McConnellsburg, Pa.; University of Pennsylvania, Philadelphia, 1886; aged 52; formerly a member of the Medical Society of the State of Pennsylvania; died at his home, May 9, from chronic interstitial nephritis.

Alston M. West, M.D., Memphis, Tenn.; University of Pennsylvania, Philadelphia, 1876; aged 67; for several years professor of chemistry, pharmacy, toxicology and hygiene in the Memphis Hospital Medical College; died at his home, July 29.

John Bain, Brandon, Iowa (license, Iowa, 1887); aged 73; for more than forty years a druggist and practitioner of Brandon; hospital steward during the Civil War; for many years township clerk and school treasurer; died at his home, July 28.

Charles T. Grivelli, Young America, Minn. (license, Minnesota, 1896); aged 43; formerly a Fellow of the American Medical Association; a member of the Minnesota State Medical Association; died at his home, June 14, from heart disease.

James Monroe Vanderpool, M.D., Calvin, Okla.; Barnes Medical College, St. Louis, 1899; aged 56; formerly a Fellow of the American Medical Association; died in a hospital in Wellington, Kan., July 29, from cerebral hemorrhage.

Ellis Banning Perry, M.D., New York; College of Physicians and Surgeons in the City of New York, 1883; aged 68; a member of the Medical Society of the State of New York; died at his home, July 31, from cerebral hemorrhage.

Luther B. Etheridge, M.D., Wagener, S. C.; University of the South, Sewanee, Tenn., 1899; aged 42; a member of the South Carolina Medical Association; also a druggist; died at his home, June 24, from cerebral hemorrhage.

Eugene A. Spenser, M.D., Cleveland, Ohio; Cleveland College of Physicians and Surgeons, 1905; aged 47; formerly a member of the Ohio State Medical Association; died at his home, August 1, from malignant disease.

Walter John Teasdale, M.D., Loadon, Ont.; University of Toronto, 1885; L.S.A. London, 1886; aged 54; formerly a member of the London Board of Education; died at his home, May 18, from tuberculous meningitis.

Omer C. Snyder, M.D., Chicago; Chicago Homeopathic Medical College, 1884; aged 60; while on a fishing trip in northern Wisconsin, died near State Line, Wis., August 6, from cerebral hemorrhage.

Llewellyn Brown, M.D., Norridgewock, Me.; Harvard Medical School, 1862; aged 81; formerly a member of the Maine Medical Association; died at his home, June 16, from cardiovascular renal disease.

William M. Shankland, M.D., Clinton, Mo.; Missouri Medical College, St. Louis, 1885; aged 57; a Fellow of the American Medical Association; died at his home, July 9, from cerebral hemorrhage.

Alfred Lewis Dennis, M.D., Conneautville, Pa.; University of Pittsburgh, Pa., 1892; aged 52; a Fellow of the American Medical Association; died at his home, May 4, from cerebral hemorrhage.

William Greenberry Lindle, M.D., Sturgis, Ky.; Kentucky School of Medicine, Louisville, 1888; aged 60; died at his home, July 30, as the result of a fall through a defective loft in his barn.

Daniel F. Callaghan, M.D., San Francisco; University of California, San Francisco, 1875; aged 70; died at his home, July 27.

Nicholas Edward Alford, M.D., Augusta, Ga.; Toledo, O., Medical College, 1887; aged 62; died at his home, July 16.

Joe N. Dial, M.D., Mount Pleasant, La.; University of Nashville, Tenn., 1852; aged 87; died at his home, July 17.

Marriages

ENOCH G. KLIMAS, M.D., Philadelphia, to Miss Estelia E. Bro aitas of Port Richmond, N. Y., at Philadelphia, August 17.

JAMES FREDERICK MUNSON, M.D., Sonyea, N. Y., to Miss Helen Jane Wilkinson of Manistee, Mich., August 2.

CHARLES EDWARD SIMA, M.D., to Miss Anna Dell Johnson, both of Baltimore, at Cumberland, Md., August 1.

EDWARD L. CARLTON, M.D., Canal Winchester, Ohio, to Mrs. Josephine A. Daukart of Chicago, July 31.

NORMAN L. MCLACHLAN, M.D., to Miss Lena Gertrude Roling, both of Findley, Ohio, July 27.

ELBERT BERKELEY TALBOT, M.D., to Miss Madeleine Wallace Lorain, both of Richmond, June 28.

JOSEPH WILLIAM WALSH, M.D., to Mrs. Irene Viola von Nagy, both of Brooklyn, August 3.

WILLIAM WALLACE LARSEN, M.D., to Miss Ellen Bolzer, both of LeMars, Iowa, July 19.

CLARENCE PERCY COOK, M.D., to Miss Frances Hanson, both of Des Moines, Iowa, June 28.

FRANK GILLINGHAM MORRILL, M.D., to Miss Mabel Nortrup, both of Havana, Ill., July 29.

BORIS DAVID RAPOPORT, M.D., Boston, to Miss Eda Rothstein of New York, May 21.

PHILIP HARMAN BROUDO, M.D., to Miss Estelle Pruzan, both of Chicago, August 16.

CHARLES E. HYNDMAN, M.D., to Miss Ruth Gilliam, both of St. Louis, August 2.

The Propaganda for Reform

IN THIS DEPARTMENT APPEAR REPORTS OF THE COUNCIL ON PHARMACY AND CHEMISTRY AND OF THE ASSOCIATION LABORATORY, TOGETHER WITH OTHER MATTER TENDING TO AID INTELLIGENT PRESCRIBING AND TO OPPOSE MEDICAL FRAUD ON THE PUBLIC AND ON THE PROFESSION

ARTICLES REFUSED RECOGNITION

Report of the Council on Pharmacy and Chemistry

Below appear abstracts of the Council's action on articles refused recognition which were not deemed of sufficient importance to require lengthy reports:

Radio-Rem

The Radium Therapy Company, Schieffelin & Co., selling agents, submitted to the Council radium emanation generators called "Radio-Rem Outfits," designed to generate respectively 200, 1,000, 2,000, 5,000 and 10,000 Mache units per twenty-four hours.

Those who are well informed on the subject of radium therapy are of the opinion that the administration of small amounts of radium emanation such as generated by certain outfits is without therapeutic value. It has been stated that at the Radium Institute of London the minimum preliminary dose is 185 microcuries (500,000 Mache units), and as many as 555 microcuries (1,500,000 Mache units) are employed.

In consideration of these facts the Council voted not to accept any radium emanation generator which produces less than 2 microcuries of emanation during twenty-four hours. Accordingly, while accepting Radio-Rem Outfit No. 5, claimed to produce 10,000 Mache units (3.7 microcuries) and Radio-Rem Outfit No. 4, claimed to produce 5,000 Mache units (1.8 microcuries), the Council voted not to accept Radio-Rem Outfit No. 3, claimed to produce 2,000 Mache units (0.74 microcurie), Radio-Rem Outfit No. 2, claimed to produce 1,000 Mache units (0.37 microcurie), and Radio-Rem Outfit C, claimed to produce 200 Mache units (0.07 microcurie).

This report having been submitted to Schieffelin & Co. and their reply considered, the Council authorized publication of the report.

Olio-Phlogosis

Olio-Phlogosis, a liquid preparation to be applied externally by means of a cotton pad, is advertised by the Mystic Chemical Company, Kansas City, Mo., thus:

"Doctor: Don't fail to use Olio-Phlogosis liberally for Pneumonia, Bronchitis and Pleurisy. It works quickly. Olio-Phlogosis is as far ahead of all medicated kaolin plasters as these plasters were ahead of the old-time moist and soggy poultices."

A pamphlet advises the use of Olio-Phlogosis in

". . . all cases of Inflammation and Congestion, such as Pneumonia, Bronchitis, Pleurisy, Croup, Boils, Carbuncles, Rheumatism, Swollen Glands, Peritonitis, Ovaritis, as a Surgical Dressing, Mamitis [Mastitis (?)], Vaginitis and Metritis (on cotton tampon to deplete these parts), Septic Wounds, Old Ulcers, Chilblain, Eczema, Neuralgia, Inflammation of the Eyes and Ears, Alveolar Inflammation, Burns, Scalds, Etc."

According to the information sent to the Council by the Mystic Chemical Company, Olio-Phlogosis has the following composition per gallon:

Ol. Gaultheria	drs.	8
Ol. Eucalyptus	drs.	8
Ol. Abies Canadensis	drs.	2
Ol. Thyme (white)	drs.	2
Resublimated Iodin crystals	grs.	32
Resorcin	drs.	1
Acid Boracic C. P.	drs.	2
Quinine Bisulphate	drs.	4
Sodium Thiosulphate	drs.	3½
Glycerin C. P.	q. s. ad gal.	1

A nonquantitative formula which appears on the label of a sample bottle sent to a physician enumerates the same ingredients except the sodium thiosulphate.

The A. M. A. Chemical Laboratory reports that no free iodin could be detected in the preparation.

Apparently, then, Olio-Phlogosis is essentially a skin irritant applied by means of cotton; it can be expected to be just about as effective as the old-fashioned cotton pneumonia jacket, used in conjunction with an aromatic skin irritant, such as camphorated oil or wintergreen or menthol ointment. The odor may have some psychic effect, and it is possible that some of the oily matter may be absorbed by the skin. That such small amounts, even if absorbed, can produce any considerable systemic effect, however, is highly improbable, and the advice that this preparation be relied on in pneumonia, pleurisy, peritonitis, etc., is pernicious. In the few cases of pneumonia in which heat is indicated, the plain cotton pad will usually be found sufficient. If the physician considers the addition of a skin irritant desirable, it is easy to select one from the official preparations. It will be far more rational to do so than to invoke the aid of a mystic name and a complex formula to which the patient and his family, at least, will be led to give unmerited credit.

The claims made for Olio-Phlogosis are unwarranted; its composition is complex and irrational, and the nondescriptive but therapeutically suggestive name is likely to lead to uncritical use. The Council voted that the product be refused recognition for conflict with Rules 6, 8 and 10, and that this report be published.

FROM A LAY VIEWPOINT

The two items that follow are taken from the New York *Tribune*. They appeared in a department known as "The Ad-Visor," published in the interest of honest advertising and conducted by Mr. Samuel Hopkins Adams. The first item is a letter to "The Ad-Visor" from Mr. Huse, editor of the Norfolk (Neb.) *News*. The comments thereon are Mr. Adams':

I am very much interested in your campaign for pure advertising. In the Norfolk *News*, which is a country daily, I have barred all cancer cures, all rupture cures, all piles advertising, and we exercise quite a rigid censorship in all our medical advertising. We do not allow the word "cure" to be used, and we bar a lot of other similar expressions. In the main I have tried to follow the Chicago *Tribune* and the Kansas City *Star*, whose ideals I have always considered high, but they publish a good deal of advertising which some papers refuse.

The whole situation is so confusing that this suggestion has come to my mind — that the newspapers of America select some responsible physician as a national censor to pass fairly and conscientiously upon all copy submitted and thus to establish a uniform basis of censorship.

If this censor were a physician of unquestioned knowledge and equally unquestioned integrity, and at the same time broad-minded and unprejudiced, so much weight could be given to this opinions that newspapers which estimate public confidence would hardly dare run the copy that such a censor should pronounce fraudulent.

Under the present circumstances, one small newspaper can hardly hope to bring about the desired reform and by barring all medical advertising merely sacrifices a very important source of revenue — and revenue which is sorely needed in the publication of a country newspaper.

N. A. HUSE.

Imagine the storm of derision and resentment which would be stirred up in "patent medicine" circles should a suggestion such as this emanate from, for example, the American Medical Association. How bitterly it would be denounced as another plot of the "Medical Trust" to destroy the innocent and public-spirited nostrum trade! But the suggestion of a national censorship does not come from medical sources. It is made by the editor of the Norfolk (Neb.) *News*, one of the greatest and perhaps the most successful "country daily" in the United States. Like many other thoughtful students of the trend of journalism, Mr. Huse perceives that the time is close at hand when the American press must dissolve partnership with the agencies of fraud, quackery and poison if it is to retain any considerable measure of public confidence and respect. He has made a good start with his own paper, but, as he justly intimates, the burden of decision is too heavy for a single institution of modest resources.

His plan might perhaps be altered and developed to advantage, as most important plans of reform must be to make them effective. For example, it may be argued that the responsibility and authority involved in such censorship would be too heavy for one man, and that a board could better do the work. On such a board there might well be a chemist of unimpeachable reputation and an advertising man representing some national product of recognized merit.

A newspaper which should accept advertising declared deceptive or misleading by such a censorship would, indeed, place itself in an indefensible position.

Whatever the composition of the censorship, Mr. Huse's suggestion is fraught with the broadest and most valuable possibilities of reform. What association of newspapers will have the courage to give it form and substance?

Correspondence

Reversal of Decision in Case of Coffey vs. Tiffany and Howard, 182 S. W. 495

To the Editor:—I regret to notice in THE JOURNAL (July 29, 1916, p. 389) a digest of the decision of the Kansas City Court of Appeals, per Johnson J., in the case of *Coffey vs. Tiffany and Howard*, 182 S. W. 495, without mention of the fact that this decision was reversed and quashed by the Supreme Court of Missouri in *State ex rel Tiffany and Howard vs. Ellison et al. Judges of the K. C. Court of Appeals*, 182 S. W. R. 996, decided last February. Your medicolegal writer was, no doubt, misled by the fact that the quashed opinion of the Kansas City Court of Appeals was sent in for publication in the *Southwestern Reporter* after it had been reversed and set aside, without notation of that fact, in the advance sheets, though it was noted in the permanent edition. I enclose copy of my report of these cases in the *Weekly Bulletin* of the Jackson County (Mo.) Medical Society for March 18, 1916.

As attorney for the defendant oculists I am familiar with the outrageous pursuit of them in this Coffey case, wherein the plaintiff's attorneys have so far been unable to get a single medical witness to support their unfounded and unwarranted claims. In fairness to my clients I think you should promptly state that the decision you reported has been set aside as erroneous and unfounded in its inferences of fact and law.

DENTON DUNN, Attorney, Kansas City, Mo.

[In our Medicolegal Department, this issue, p. 635, appears an abstract of the supreme court decision.—ED.]

Cerates and Ointments in Granulating Wounds

To the Editor:—Apropos of the discussion of the use of a secret nostrum of wax, paraffin and resin in granulating wounds (THE JOURNAL, Aug. 12, 1916, p. 516), it should be said that plain, amber petrolatum, to which is added one part of the ointment of zinc oxid to from six to ten parts of the petrolatum, is far better than any such mixture could be, and cheap enough to be ordered in barrels, as a protective and mild antiseptic covering for granulations if used freely on the dressings. Under this treatment wounds heal quickly and with a minimum of discharge, the epithelium propagating itself over the greater part of the surface without the need of skin grafting. (See my note in the *New York Medical Journal*, April 26, 1913.)

The need for protecting healthy granulations from contact with gauze or other dressing as well as from the air has been neglected somewhat since the era of antisepsis. No matter how sterile the gauze placed in contact with healthy granulations, innumerable wounds will be produced every time the gauze is removed. The granulations remain unwounded if separated from the gauze by a sufficient thickness of the ointment, the whole being covered by the gauze or absorbent cotton and removed once or twice daily. Drainage occurs freely about the edges.

Carrel found amber petrolatum a better preservative of refrigerated living tissue than the colorless variety, doubtless owing to traces of decolorizing chemicals in the latter.

G. BETTON MASSEY, M.D., Philadelphia.

Swallows.—It may take more than one swallow to make a summer, but half a swallow of dirty milk can make a summer complaint.—*Bull. Lincoln (Neb.) Health Dept.*

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted, on request.

BATH PRURITUS

To the Editor:—I have had for a number of years a personal ailment which has proved intractable. That it is not uncommon I know by the number of cases coming under my observation, some of the patients getting perfect results from proper study and treatment, while others, like myself, experience little or no relief. Having noticed recently several articles in THE JOURNAL bearing more or less on this subject, I thought I might get some help from the study and experience of others.

The complaint is an intolerant itching of the skin, following a bath, noticeable more or less over the entire body, but most severe on the lower extremities and particularly from the knees to the ankles. It comes in a slightly less aggravated form from the slight friction incident to the rubbing with a Turkish towel, particularly when the skin is moist from perspiration. The itching lasts from ten minutes to half an hour, is not influenced by hot or cold weather, and is not increased by the warmth of the bedclothes, as so often seen in old persons. It is most severe when I remain in the water but a short time, and is mitigated or entirely absent when I remain more than fifteen minutes. Cold cream, oil or other protective gives some relief, but this is not pleasant in the hot weather.

A number of years ago I consulted specialists both in this country and in Europe, getting varying opinions as to the cause, but little help. Some called it a neurosis, others a disturbance of the alimentary canal. At the time I suffered much from periodic indigestion and probably some autointoxication with some of the little neuroses so commonly coincident. Diet and proper living corrected this, and I am now in perfect health except for now and then a mild recurrence of the intestinal trouble, from which I no doubt have some autointoxication. When this comes on it begins with a slight headache, rheumatic pains and loose and imperfectly digested stools. This I correct with catharsis, restricted diet, etc., but with no change in the itching. My habits are and always have been good. I smoke very moderately and use no intoxicants; I eat and sleep regularly, eating only simple foods and sparingly of meat. I work moderately, get several hours' daily mild recreation; am of normal weight, and the most rigid physical examination reveals no noticeable ailment. I use very little tea or coffee, but drink a quart or more milk daily. Abstaining from meat and even heavy vegetable proteins makes no change in the itching, but I notice that at those times when the itching is least noticeable my digestion is always at its best.

There is nothing in the family history to throw any light except a little tendency to muscular rheumatism and eczema, neither, however, at all marked. I have three spots where there is occasional itching irrespective of the use of water: the scalp, where an ichthyol ointment gives satisfactory relief, but must be used regularly, and a spot about an inch square on the knee and one a little smaller on the point of the chin which at times cannot be relieved by anything tried so far. At these points there is nothing to be seen, not even redness, when the trouble is at its worst.

C. H. K., M.D.

ANSWER.—The foregoing is an accurate description of a classical case of bath pruritus. In nearly all cases it is impossible definitely to determine the cause. There are probably two factors in the etiology: (1) a naturally delicate skin that reacts more than the average skin to causes of irritation, and (2) hypersensitiveness of the skin resulting from some internal disturbance. This is probably in most cases a reaction having its origin in the gastro-intestinal tract, for the trouble occurs most frequently in persons who have some disturbance of digestion. These patients discover, as in this case, that the itching varies with the condition of the digestion.

In all cases it is desirable to relieve digestive disturbances as far as possible. In some cases this will control the trouble. For example, it is an occasional experience that a person gets rid of a bath pruritus by the radical change in his food which comes by changing from one eating place to another. Some cases of bath pruritus are utterly intractable and yield to no treatment.

The relief obtained from local measures is very uncertain. Almost any bland application that lubricates the skin and gives it some protection is more or less agreeable. In summer during the hot weather when greases are uncomfortable, a thin tragacanth jelly to which is added an inert powder may be useful. The following formula will give such a preparation:

	Per Cent.
Powdered tragacanth	0.5
Zinc oxid and calamine, āā	12
Glycerin	12
Water, q. s. ad.	100

The tragacanth, glycerin, and about one half of the water should be heated together until the tragacanth is dissolved. The powders mixed with the remainder of the water are then added with stirring. This forms a thick mucilage which dries readily on the surface, and which can be easily painted on, or smeared on, immediately after bathing. To it either camphor-chloral, camphor-menthol, or camphor-phenol can be added in the strength of from 0.5 to 2 per cent. Also the various liquid preparations of tar can be added in the proportion of from 5 to 10 per cent. Sometimes these antipruritics are useful. Sometimes they are not. As to which one will be most useful, or which combination, only trial will show. In winter time greasy applications are usually much more efficient. Patients with bath pruritus naturally have dry skins. This condition is exaggerated in winter, and the patients are usually better off for the application of a fat, such as cold cream, to which an antipruritic has been added.

Medical Education and State Boards of Registration

COMING EXAMINATIONS

MASSACHUSETTS: Boston, Sept. 12-14. Sec., Dr. Walter P. Bowers, secretary of the Massachusetts Board of Registration in Medicine, Room 501, No. 1 Beacon St., Boston.

MISSOURI: Kansas City, Sept. 18-20. Sec., Dr. J. A. B. Adcock, State House, Jefferson City.

NEW YORK: Albany, Buffalo, New York and Syracuse, Sept., 19-22. Mr. Harlan H. Horner, Chief Examinations Division, The University of the State of New York, State Department of Education, Albany.

Illinois January Report

Dr. C. St. Clair Drake, secretary of the Illinois State Board of Health, reports the written examination held at Chicago, Jan. 13-15, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 64, of whom 41 passed and 23 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Total No. Licensed
Bennett Medical College	(1914, 3) (1915, 5)	8
Chicago College of Medicine and Surgery	(1914) (1915, 9)	10
Hahnemann Med. Coll. and Hosp., Chicago	(1915)	2
Jenner Medical College	(1915)	1
Loyola University	(1916)	2
Northwestern University	(1911) (1915, 3)	4
Rush Medical College	(1915)	7
Johns Hopkins University	(1914)	1
University Medical College, Kansas City	(1907)	1
New York Med. Coll. and Flower Hosp.	(1915)	1
Meharry Medical College	(1914)	1
Marquette University	(1913)	1
University of Toronto	(1910)	1
National University, Athens,	(1895)	1

FAILED	
Bennett Medical College	(1915) 7
Chicago College of Med. and Surg.	(1914) (1915) 2
Chicago Hosp. Coll. of Med.	(1915) 3
College of Med. and Surg., Physio.-Med., Chicago	(1910) 1
Illinois Medical College	(1910) 1
Jenner Medical College	(1915) 1
National Medical University, Chicago	(1908) 1
Hospital College of Medicine, Louisville	(1904) 1
University of Louisville	(1913) 1
Meharry Medical College	(1911) (1914) (1915) 3
National Univ. of Arts and Sciences	(1914) 1
University of Moscow	(1895) 1

Connecticut March Report

Dr. Charles A. Tuttle, secretary of the Medical Examining Board of the State of Connecticut, reports the practical and written examination held at New Haven, March 14-15, 1916. The total number of subjects examined in was 7; total number of questions asked, 70; percentage required to pass, 75. The total number of candidates examined was 18, of whom 12 passed and 6 failed. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
Georgetown University	(1913)	75.2
George Washington University	(1915)	79.9
College of Phys. and Surgs., Baltimore	(1910)	75
Harvard University	(1914) 76.3, 89.4; (1916)	80.7
College of Phys. and Surgs., in the City of N. Y.	(1884)	89.6
Columbia University, Coll. of Phys. and Surgs.	(1905)	85.3
Long Island College Hospital	(1912)	84.6
Temple University	(1914)	75.4
University of Vermont	(1914)	79.7
University of Virginia	(1904)	83.3

FAILED		
Georgetown University	(1911)	73.4
Eastern University *	(1913)	56.9
Maryland Medical College	(1913)	56.6, 63.4
College of Phys. and Surgs., Boston	(1910)	51.1
Jefferson Medical College	(1912)	72.6

* Officially reported as not recognized by the Maryland State Board of Medical Examiners.

Wyoming March Report

Dr. H. E. McCollum, secretary of the Wyoming State Board of Medical Examiners, reports the written examination held at Laramie, March 14-16, 1916. The total number of subjects examined in was 10; total number of questions asked, 100; percentage required to pass, 75. The total number of candidates examined was 7, including 1 osteopath, all of whom passed. Seven candidates were licensed through reciprocity. The following colleges were represented:

PASSED		
College	Year Grad.	Per Cent.
University of Colorado	(1911)	88.8
Chicago College of Med. and Surg.	(1909)	76.7
Rush Medical College	(1891)	84.6
Baltimore Medical College	(1900)	82.3
University of Michigan Medical School	(1883)	75.1
University of Toronto	(1914)	87

LICENSED THROUGH RECIPROCITY		
College	Year Grad.	Reciprocity with
Bennett Medical College	(1911)	Illinois
Chicago Coll. of Med. and Surg.	(1909) (1911)	Illinois
Northwestern University	(1913)	Utah
Rush Medical College	(1914)	Utah
Lincoln Memorial University	(1910)	Tennessee
Wisconsin College of Phys. and Surgs.	(1905)	Wisconsin

Book Notices

A MANUAL OF SURGICAL ANESTHESIA. By H. Bellamy Gardner, M.R.C.S., L.R.C.P., Honorary Anesthetist to the King George Hospital. Second Edition. Cloth. Price, $2.25 net. Pp. 220, with illustrations. New York: William Wood & Co., 1916.

The subject is presented in thirty-five chapters which deal with the various phases of anesthesia. The predominant impression made by the book is the recommendation of chloroform alone or combined with ether. To those who still use chloroform the manual will prove satisfactory, but to those who believe that there are both immediate and remote dangers in the use of this drug, the recommendation will materially lessen the value of the book as a guide or help to the student, anesthetist or surgeon in the selection of an anesthetic.

Following a chapter on the history of surgical anesthesia a clear, concise review of the duties of the anesthetist is given. This chapter deserves the consideration of the experienced anesthetist as well as the novice in anesthetic work. The chapter on cardinal principles for the conduction of anesthetic administrations, in which the author clearly states the dangers of obstructed breathing and emphasizes the importance of maintaining a clear airway, combined with the succeeding chapter on anoxemia and asphyxia, is perhaps the most valuable part of the book.

Chapter V deals with the signs of anesthesia. A description of the method of touching the cornea for lid reflexes is minutely described and recommended as the best indication as to the degree of narcosis. Severe corneal ulcerations frequently develop from such an unjustifiable practice. With reference to the pupil the author says: "The size of the pupil of the eye in the different degrees of anesthesia is subject to variations from so many causes that the simple observation of its diameter at any given moment is insufficient evidence of the existing depth of narcosis." The author fails to grasp the fact that it is not the diameter of the pupil which should form the basis of our conclusion as

to the degree or depth of narcosis, but its activity to light when the lid is suddenly raised. In the same chapter respiration, color of the skin, pulse, muscular system and surface temperature are well defined, as is also the physical type and temperament of the patient in the succeeding chapter. Pathologic conditions are well dealt with. The same chapter discusses the choice of the anesthetic. No doubt the latter will receive the most adverse criticism from American anesthetists and surgeons (the author is a London anesthetist), because of the constant recommendation of chloroform either alone or combined with ether. Several pages are devoted to nitrous oxid and the different methods of its administration for general and dental surgery.

A short description of the open method of etherization is given, and attention is called to its advantages. The closed method and rebreathing are given considerable space, and attention is called to an inevitable anoxemic element due to the rebreathing of expired air.

Chloroform alone and combined with ether, and various methods and appliances for its administration, are exhaustively dealt with.

The method of producing spinal analgesia is described, and the sane comment is made that "a low rate of mortality from this method of analgesia can only be expected from the greatest care and skill in technic." It is doubtful if shock is produced by the "removal of the breast from the pectoral muscles" or by the "use of the mallet and chisel during mastoid operations," and consequently if shock occurs at such a time it is probably due to hemorrhage. The statement that "the effect of shock on the respiratory center produces deep crowing inspiration and laryngeal spasm" must be questioned. Such a condition is produced by a too concentrated vapor, and is present when there is no evidence of shock. The remainder of the chapter on shock is in other respects in keeping with the general high order of the manual.

Nine pages are devoted to adenoids, and attention is called to the dangers associated with anesthesia in this condition. Twilight sleep is described but not recommended. The closing chapter deals with acidosis. Local anesthesia is made conspicuous by its absence.

HIPPOCRATES JONES. His First Confinement Case and What Came of It. An Alleged Poem in Thirteen Cantos. By Walter Graves, M.D. Paper. Price, 50 cents. Pp. 50, with illustrations. Wichita, Kansas: The Author, 1916.

This is a satirical, sarcastical near-poem, describing the brief medical career of an egotistical, superscientifically educated young doctor, who, however, lacked common sense and practical medical knowledge. He located in a western town, which was his initial mistake. His first and only confinement case was his undoing. The nurse—one of the practical kind—finally eliminated the young doctor by "besoming" him out of the room, and assumed charge. In the later developments, he is taken in charge by the vigilance committee, and is nursed back to health by the nurse, who finally, for pity's sake, marries him. The reading of this "poem" will prove to be a soothing and cool way of passing a half hour.

POST-MORTEM METHODS. By J. Martin Beattie, M.A., M.D., Professor of Bacteriology, University of Liverpool. Cloth. Price, $3.25. Pp. 231, with illustrations. New York: G. P. Putnam's Sons, 1915.

This is one of the Cambridge Public Health Series, the editors of which have wisely recognized that promotion of frequent and well conducted necropsies is an important function of public health work. The author has produced a book which can be used to advantage especially by practicing physicians and others whose chief activities are not those of the pathologist. The directions are clear, the methods simple and sound, the advice eminently practical. Special chapters are devoted to medicolegal examinations and to histologic and bacteriologic methods. It is an unpretentious work, which fulfils its aims excellently, and it can be recommended especially to those who have occasionally to make a postmortem examination.

Miscellany

Improvement in Medical Statistics

Last year the Netherlands Medical Association appointed a committee to study the question of medical statistics, and their first report was recently published in the organ of the association (*Nederlandsch Tijdschrift voor Geneeskunde*, 1916, p. 1661). The committee relates that in an examination of the books of the sixty-four hospitals in the Netherlands, chaotic differences were found between the data recorded and the methods of compiling them in the different hospitals. Their records therefore cannot be compared, and thus are not a source for dependable statistics. The committee deplores this, and makes some suggestions which would remedy this state of affairs. In the first place, however, it deprecates any attempt to force uniformity in hospital records. The liberty of each institution to record and publish what seems to it important must not be interfered with. But certain data should be recorded, and these the committee thinks should be called to the attention of every hospital with the request to conform to the suggestions. The committee adds that the suggestions have been restricted to what is absolutely necessary, so as not to add to the *beslommeringen* of the hospital director. (This useful and untranslatable Dutch word *beslommeren* means "to involve in all sorts of difficult affairs.") The committee suggests, therefore, that the records of each hospital should state:

Number of patients January 1, classified by sex.
Number of patients admitted during calendar year, classified by sex.
Number of patients discharged during calendar year, classified by sex and by age groups.
Number of patients died during calendar year, classified by sex and by age groups.
Number of patients died within from two to twenty-four hours after admittance, classified by sex and by age groups.
Number of patients, December 1, classified by sex and by age groups. The classification by sex should include both adults and children.
Total number of days of hospital treatment of the patients discharged during the year and also of those who died, including the number of days of hospital treatment during their entire sickness, classified by sex.
The last diagnosis of the sickness of the discharged patients, classified according to Bertillon's smaller list, specifying sex and age groups (0 year; 1-4; 5-13; 14-19; 20-49; 50 and over).
Ditto for those that died.
Number of available beds December 31.
Number of prescriptions filled during the year.
Number of necropsies during the year.
Number of attendants, male and female, December 31.

The report of the committee tabulated data along the suggested lines from the few hospitals where they were available for the year 1914. The tables show the simplest methods for keeping the records in this manner, and a glance at them demonstrates its advantages. A later issue of the *Tijdschrift* contains an earnest plea for the great value of medical statistics when interpreted with understanding (see Abstract 62 in THE JOURNAL, July 29). They are liable to prove misleading when viewed from the methematician's standpoint alone.

Salicylates in Scarlet Fever

The many analogies between scarlet fever and acute rheumatism seem to have been confirmed by the benefit from salicylic medication in the experience of F. Ramond and G. Schultz with scarlet fever in soldiers. They give 6 gm. a day, occasionally even more, fractioned throughout the day and night, commencing as early as possible, and keeping it up until the fever and general symptoms have subsided. This is usually within three days, but, to be safe, the drug is kept up for another two days. It is resumed again the fifteenth day, the dose being reduced by 1 gm. a day. This wards off the complications which are so liable to develop from the fifteenth to the twentieth days, especially tonsillitis and nephritis. If the heart gives symptoms of trouble, the salicylate should be given more cautiously and its elimination in the urine supervised even for this. The mortality under this treatment dropped to 0.25 per cent. and complications were exceptional and mild.—*Bull. de la Soc. méd. d. hôp. de Paris*, 1916, xxxii, 866.

Medicolegal

A Silence Not Deemed an Admission of Negligence

(State ex rel. Tiffany et al. vs. Ellison et al., Judges of the Kansas City Court of Appeals (Mo.), 182 S. W. R. 996)

The Supreme Court of Missouri, in this original action in certiorari, as it is called, by agreement of four members of the court, two others dissenting and a third not sitting, orders the record of the court of appeals quashed in the malpractice case of *Coffey* vs. *Tiffany et al.* (Mo.), 182 S. W. R. 495, reported at some length in THE JOURNAL, July 29, 1916, p. 389, under the heading "Class of Errors for Which Physicians and Surgeons Are Liable." The supreme court says that, in the disposition of this case, it is not necessary to tread on any disputed ground. During the course of the trial the process server, who served the summons on Dr. Howard, was permitted to testify to facts which the trial court considered equivalent to an admission of negligence by Dr. Howard, stated as follows: Plaintiff Coffey brought her suit six months after the alleged injury. "The summons was served by a deputy sheriff who was introduced as a witness by plaintiff, and testified to what occurred at defendant's office when Dr. Howard was served. Dr. Tiffany was not in, and after the papers were served on Dr. Howard he and the witness went downstairs (the offices were on two floors), when Dr. Howard called upstairs to the clerk who had received plaintiff, and asked if she 'had a record of the Mary Coffey case.' The clerk answered that she had, and that plaintiff 'was the schoolteacher that he dropped iodine in her eye and put it out.' Dr. Howard, who was standing by the side of the witness, said nothing. Each defendant objected to this testimony and the court sustained the objection of Dr. Tiffany, but overruled that of Dr. Howard." The supreme court has no hesitancy in saying that the admission of this evidence was error, nor has it any doubt that its admission contravened the announced law by this court, as well as by other courts. Under the facts and rules of law, Dr. Howard was under no obligations to engage (at long range and with party out of his sight and presence) in a dispute with the girl over a voluntary statement of hers, and one wholly irresponsive to the question asked. She was not asked what the record would show, but merely if she had kept a record. Her remark amounted to a charge of criminal negligence, it was true, but because Dr. Howard, situated as he was, chose to treat such a charge, coming from that particular source, with silent contempt, should not permit such remarks to go in as evidence of an admission of guilt. The court added that it did not believe that the verdict could have been got without this testimony of the sheriff, and that if he overheard anything it must have been about *dionin*, and not *iodine*, of which there was no evidence in the case. The court also commented on the lack of showing of any causal connection between the treatment and the blindness, which latter was presumably due to the disease in the absence of competent proof to the contrary.

Expert Testimony and Hypothetical Questions

(Kentucky Traction & Terminal Co. vs. Humphrey (Ky.), 182 S. W. R. 854)

The Court of Appeals of Kentucky, in reversing a judgment entered against the company, holds that there was error in admitting a faulty hypothetical question the effect of which it says was almost to force an answer from the witness establishing the plaintiff's cause of action, and without which her miscarriage could not be connected with the accident. The court says that expert testimony is regarded by the law as the weakest character of testimony. It is a species of hearsay testimony forming an exception to the general rule forbidding the introduction of that character of testimony because of the necessities of the case, and the tendencies of the courts are constantly inclining in the direction of narrowing the rule permitting its introduction, rather than extending it. The expert witness, as latter-day experience has taught, always colors his testimony for the side introducing him, and, indeed, we learn from the history of the country that in great centers of population there exist experts following the business of bartering their expert or scientific knowledge to the litigant who can pay the highest price, and while there was nothing to show that the testimony of any of the physicians in this case was influenced by any such considerations, yet it is because of the existence of the facts which the court has stated that the rule of law permitting the admission of expert testimony has been brought to its present condition. With this character of evidence being regarded by the law as stated, it is the more important that the circumscribing rules permitting its introduction should be the more strictly enforced. The hypothetical question grouping therein the facts forming the premises on which the answer of the witnesses must be based must include no facts not shown by some of the testimony to have existed; nor must it omit any relative fact shown by some of the testimony to have existed. This is the universal rule. From the authorities it will be found that the rule requires the examiner to incorporate into the hypothetical question, not necessarily facts which have been conclusively proven, but that he must incorporate therein facts only which the testimony tends to establish and such as the jury may be authorized under the testimony to find. Nor can his question omit in its incorporation proven facts, or those which the testimony tends to prove which are material and would have a bearing on the principal facts sought to be established or refuted.

City Not Liable for Injury from Defective Condition of Pesthouse

(Butler vs. Kansas City (Kan.), 155 Pac. R. 12)

The Supreme Court of Kansas says that the city maintained a pesthouse where persons afflicted with smallpox were taken for isolation and treatment. The plaintiff's petition alleged that he became sick with smallpox and was taken by employees of the city and confined in one of the rooms or wards of the pesthouse, where each morning he was obliged to start a fire, and that blood poisoning resulted from a splinter of the flooring which entered his bare foot as he walked from the bed to the stove. The petition alleged that the city was negligent in maintaining the floor of the room in a defective and dangerous condition. The plaintiff recovered a judgment for damages, but that is reversed by the supreme court, which holds that the petition failed to state a cause of action against the city, and the latter's demurrer must be sustained. The duty of a municipal corporation to conserve the public health is governmental, and it is not liable for injuries inflicted while performing such duty. Where a municipal corporation maintains a pesthouse for the treatment and isolation of persons who have been exposed to or affected with smallpox, it performs a governmental duty, and the rule that the governmental agencies of the state are not liable in an action of tort for either misfeasance or nonfeasance applied to this case.

Distinction Between Boils and Abscesses

(Midland Casualty Co. vs. Mason (Okla.), 154 Pac. R. 1171)

The Supreme Court of Oklahoma, in reversing a judgment obtained by Plaintiff Mason, holds that a special accident and health insurance policy, providing for the payment of indemnity in the event the insured under certain conditions suffers from boils, is clear and explicit, and does not cover disability occasioned by a disease designated as "ischiorectal abscess"; and the courts have not the right to enlarge on the plain provisions of such a policy. The court says that the plaintiff, so insured, alleged that he suffered from "deep-seated" boils. There was evidence offered by him that he was suffering with a disease designated as "ischiorectal abscess," and that this expression was synonymous with "boils." The trial court, however, found that there is a distinction between a boil and an abscess; that the term "ischiorectal" merely determines the locality of the abscess; that an abscess is a condition wherein the internal portions of the anatomy are affected, as an abscess of the liver or of the brain, but that a boil is external in involving only

the skin; that by a preponderance of the testimony it was shown that there is a good reason why insurance companies should include boils and exclude abscesses in a health indemnity policy, the reason being that boils rarely prostrate or disable the patient, while abscesses usually do; that the one is included and the other excluded as a matter of economy. Yet, after making these special findings of fact, the trial court proceeded to render judgment in favor of the plaintiff on the ground that an insurance policy should be construed liberally in favor of the insured, and, inasmuch as the plaintiff paid the premium in good faith and thought he was protected by the policy, he should not be bound by technicalities. Was the question presented a technical one? The supreme court thinks not. The language of the policy was clear and explicit. It insured against boils, not against abscesses. If the finding was correct that abscesses are internal, while boils are external, afflictions, involving only the skin, and this court is bound by that finding, the policy conveyed a clear and explicit meaning, which involved no ambiguity or absurdity. It insured against boils, and the courts have not the right to enlarge on the plain provisions of the policy and insure against abscesses.

Taking Scrapings from Beneath Finger Nails to Test for Blood

(State vs. McLaughlin (La.), 70 So. R. 925)

The Supreme Court of Louisiana, in affirming a conviction of murder, says that the Bertillon operator in the office of the chief of detectives of the city of New Orleans was permitted to testify, over objection, that on the day of the defendant's arrest, which was the day of the homicide, he (the operator), with the assistant chief of detectives, visited the defendant, then in prison, and "took the scrapings from his finger nails, between the flesh and the finger nails, the dirt of the left and right hands"; that he placed the scrapings from the two hands, respectively, in separate envelopes, identified the envelopes, and turned them over to the assistant chief. The court holds that the testimony was properly admitted, and its admission violated no constitutional right of the defendant. A person charged with murder, by cutting the throat, is denied no constitutional right in having the scrapings from beneath his finger nails, and his clothing taken, though against his will, with a view to their being tested for the presence of human blood. Again, the court says that the defendant had no reason to complain, as he offered evidence to show that he had had a fight on the night of the homicide, and that his hands were covered with blood and his shirt a little stained therewith. And the testimony of the official chemist of the city was properly admitted to show that the envelopes mentioned above were delivered to him; that he analyzed their contents and found human blood in the "scrapings" indicated as having been taken from the right hand.

When an Injury Occurs

(Johansen vs. Union Stockyards Co. (Neb.), 156 N. W. R. 511)

The Supreme Court of Nebraska had in this case the question as to when an injury to one of the plaintiff's eyes occurred, as determining whether he had given notice and made his claim within the time prescribed by the employer's liability act. The court says that the act defines the words "accident" and "injury" as used therein, and distinguishes between them. An accident produces "objective symptoms of an injury," and an injury includes violence to the physical structure of the body and the natural results therefrom. When an accident to an eye, which at first appears not serious, results, after a week or more, in a diseased condition of the eye which destroys the sight, the "injury occurred" within the meaning of the statute, when the diseased condition culminated. Here the plaintiff, while he was engaged in preparing a tar mixture for roofing purposes, had some of it strike him in the eye, December 18. The evidence was without contradiction that the employees who were working with him at the time treated the boiling over of the tar and its effects on those working over it in the nature of a joke, not realizing that anyone had been seriously injured. Moreover, the plaintiff himself was not aware of the effects that would naturally result therefrom, but went to his home the night after the accident and washed his eye with warm water, and continued so to treat it, without realizing what might result from the accident, for several days, until about December 25, when he was induced to consult a physician, who advised him to go to a hospital and consult an expert. This he accordingly did, and was informed that the eye was in a serious condition which might result very unfavorably. During this time apparently, from this evidence, the injury resulting from the accident gradually became developed, and it could not be said that the injury resulted from the accident, within the meaning of the statute, before the time it was discovered that it might become permanent, which was some time after December 25. This evidence clearly justified the finding of the trial court, under this statute, that the accident resulted in a total disability to the plaintiff, December 25.

Current Medical Literature

AMERICAN

Titles marked with an asterisk (*) are abstracted below.

American Journal of Public Health, Boston

July, VI, No. 7

1 Place of Nuisances in Law. L. W. Feezer, Boston.—p. 655.
2 Occupational Mortality Experience of 94,269 Industrial Workers. L. I. Dublin, New York.—p. 663.
3 Experience of New York City in Grading Market Milk. L. P. Brown, New York.—p. 671.
4 Reliability of Statements of Cause of Death From Clinical and Pathologic Viewpoints. H. Emerson, New York.—p. 680.
5 Comparative Bacteriologic Examination of Shell Liquor and Meats of Oysters. L. A. Round, Washington.—p. 686.
6 Live Little Longer; Triple Alliance Between Public, Physician and School. M. E. Bingeman, Rochester, N. Y.—p. 694.
7 Inoculation Against Typhoid in Maryland. F. W. Hachtel and H. W. Stoner, Baltimore.—p. 703.
8 One Year's Experience with New Model Vital Statistics Law in South Carolina. J. A. Hayne, Columbia, S. C.—p. 707.
9 Analysis of Appendicitis Statistics. K. Stoumann, Newark, N. J. —p. 714.
10 Bacillus Carrier and Restaurant. A. I. Kendall, Chicago.—p. 725.
11 Public Health Publicity. E. A. Moree.—p. 730.
12 Proposed Score Card for Refrigerators. W. A. Evans, Chicago. —p. 743.

American Journal of Roentgenology, New York

July, III, No. 7

13 *Use of Oxygen in Cystography with Preliminary Report on Use of Oxygen in Pyelography. A. Granger, New Orleans.—p. 351.
14 Segmentation in Diagnosis of Stomach Lesions. P. Eisen, Chicago. —p. 354.
15 *Cause and Prevention of Constitutional Symptoms Following Deep Roentgentherapy. S. Lange, Cincinnati.—p. 356.
16 *Roentgen Treatment of Epithelioma. J. H. Edmonson, Birmingham, Ala.—p. 358.
17 Roentgenographic Study of Pericolic Membrane Involving Splenic Flexure. A. M. Cole, Indianapolis.—p. 362.
18 Diaphragm as Index of Pathology. M. J. Hubeny, Chicago. —p. 364.
19 1. Phenomenon of Water Street. 2. Dilatation of Duodenum in Chronic Appendicitis. 3. Motility Phenomenon in Some Cases of Gastric Ulcer. A. Bossler, New York.—p. 365.
20 Easy and Accurate Pelvimetry by Roentgen Ray. H. W. Van Allen, Springfield, Mass.—p. 367.
21 Case of Associated Gastric and Duodenal Ulcer. R. D. Carman, Rochester, Minn.—p. 369.
22 Broncho-Esophageal Fistula. R. D. Carman, Rochester, Minn. —p. 370.

13 and 15. Abstracted in THE JOURNAL, Nov. 6, 1915, pp. 1669 and 1670.

16. Abstracted in THE JOURNAL, Oct. 30, 1915, p. 1581.

Boston Medical and Surgical Journal

August 3, CLXXV, No. 5

23 *Results Obtained in Treatment of Diabetes Mellitus. E. P. Joslin, Boston.—p. 147.
24 *Definition and Detection of Acidosis in Diabetes Mellitus. A. A. Hornor, Boston.—p. 148.
25 *Blood Sugar in Diabetes Mellitus. O. F. Rogers, Jr., Boston. —p. 152.
26 Nephritis; Tests of Renal Function. F. W. Peabody, Boston. —p. 158.
27 Eye Changes in Kidney Diseases; Their Diagnostic and Prognostic Value. P. H. Thompson, Boston.—p. 161.

28 Physiologic Point of View and Necropsies. F. H. McCrudden, Boston.—p. 167.
29 Corsets vs. Backache and Fatigue. A. S. Cutler, Westborough. —p. 168.

23. **Treatment of Diabetes Mellitus.**—The average duration of life of 408 fatal cases under Joslin's observation has been five years, and that of 490 living cases has already reached six years. During the year ending May 1, 1915, 211 cases of diabetes came under observation, and of this number 31, or 15 per cent., died; during the subsequent year 314 cases were seen and 37, or 11.7 per cent., died. A study of the 37 fatal cases seen this last year shows that death might have been deferred in about one half of these if the methods of treatment now in general use had been adopted. In a study of the causes of death of the 408 fatal cases, it was found that two out of every three (66 per cent.) died of coma, that 87 per cent. of all those who succumbed during the first year of the disease died of coma, and that this was the case in 100 per cent. of the fatal cases in children. Therefore, Joslin concludes, if the mortality of diabetes is to be reduced, our energies should be directed first toward the avoidance of coma, because the treatment of coma is so unsatisfactory; and, second, particular attention should be exercised in the management of cases of diabetes in the first year following the detection of the disease. Furthermore, all cases should be persistently followed up, and the good effects of treatment not be allowed to lapse by indifference or neglect.

24. **Detection of Acidosis in Diabetes Mellitus.**—By a study of the carbon dioxid content of alveolar air Hornor found that normally the tension of carbon dioxid varies between 38 and 45 mm. of mercury. Among diabetics with slight acidosis, the carbon dioxid tension varies between 32 and 38 mm. of mercury; with moderate acidosis between 28 and 32 mm. of mercury; severe acidosis less than 25 mm. of mercury. Nineteen mm. of mercury is the lowest tension observed in a patient ultimately recovering from acidosis. Nine mm. of mercury is the lowest observed in this present study. That was in a comatose patient only a few hours ante mortem. The acidosis of diabetes mellitus, aside from its clinical picture of exaggerated respiration, drowsiness and rapid pulse, is defined by Hornor as a condition in which the carbon dioxid tension in the blood and, consequently, in the alveolar air is reduced; the acetone bodies in the blood and urine are increased and associated with this is a rise in the excretion of ammonia; glycosuria is marked, and, saving exceptional cases, toward the end of prolonged coma, the carbohydrate balance is markedly negative.

25. **Blood Sugar in Diabetes Mellitus.**—The blood sugar among patients treated at the Massachusetts General Hospital who had diabetes but who had had no previous treatment, or whose treatment had not been efficient, that is, they were still excreting considerable sugar, Rogers says, was about 0.26 per cent. for an average, with variations from 0.76 to 0.16 per cent. The highest value that was found (0.76 per cent.) was in a man in coma and the next highest was 0.36 per cent., in a very severe diabetic on the verge of coma. Values above 0.30 per cent. seem to be uncommon unless there is some difficulty on the part of the kidneys in accomplishing excretion. On the other hand, the blood sugar determinations done on patients at the time they left the hospital, when they were sugar free, and had been so generally for some days or weeks, showed variations from 0.07 to 0.18 per cent., and averaged 0.12 per cent.

Delaware State Medical Journal, Wilmington

March, VII, No. 4

30 Treatment of Fractures. H. Springer, Wilmington.—p. 3.

Florida Medical Association Journal, Jacksonville

July, III, No. 1

31 Acidosis in Infancy and Childhood. J. D. Love, Jacksonville. —p. 1.
32 Acidosis. R. H. Knowlton, St. Petersburg.—p. 4.
33 Acidosis in Children. J. M. Grantham, Tampa.—p. 8.
34 Pyelitis of Infancy. J. W. West, Live Oak.—p. 10.
35 Importance of Muscle Repair in Perineorrhaphy. A. C. Ives, Tampa.—p. 11.
36 Diagnosis and Treatment of Chronic Gonorrhea in Female. G. A. Lassman, Tampa.—p. 13.
37 Bacteriology and Channels of Invasion in Acute Otitis Media. F. J. Walter, Daytona.—p. 16.

Journal-Lancet, Minneapolis

August 1, XXXVI, No. 15

38 Semeiotic Significance of Pathologic Findings in Adult Feces. C. P. Robbins, Winona.—p. 435.
39 *Varicose Veins. D. C. Balfour, Rochester.—p. 439.
40 Endoscopic Surgery of Esophagus and Respiratory Tract. F. Roost, Sioux City, Iowa.—p. 445.
41 Relation of Internal Secretions to Neurology and Psychiatry. E. M. Hammes, St. Paul.—p. 449.
42 Gastric Diseases; Diagnosis. J. W. Shuman, Sioux City, Iowa. —p. 453.
43 Wallingford Investments. J. J. Lambrecht, Minneapolis.—p. 455.

39. **Varicose Veins.**—Of 256 patients operated on by Balfour and others according to the Mayo method, letters were received from 161. In no case has the lapse of time since operation been less than one and one-half years. In 68 patients the condition was associated with varicose ulcer; in 93 there was no ulcer. Thirty-nine (57.4 per cent.) of the 68 patients having ulcer were cured, that is, the ulcer had healed, the veins had disappeared, there was no swelling of the feet, and the patients were able to carry on their work without pain; 16 (23.6 per cent.) reported great improvement, the ulcer having healed in the majority, but minor complaint of occasional swollen feet after a long day's work, or of some aching in the legs, so that 80 per cent. were either cured or improved. In 13 (19 per cent.) the results were definitely unsatisfactory. The ulcer had either failed to heal or there had been periods of complete healing, then pain and swelling sufficient to make the prolonged erect posture uncomfortable. Elastic bandages kept some of these patients in a fair degree of comfort, but the operation itself had failed. In the 93 patients without ulcer, better results were obtained; 67 (72 per cent.) were quite cured, 16 (17 per cent.) were improved, while 10 (11 per cent.) were unsatisfactory, so that in practically 90 per cent. of this group the results were good.

Balfour suggests that the causes of failures in the series may have been due in part to the selection of cases, incomplete operation, or lack of care in after-treatment. A serious complication occurring with some frequency in the long standing cases is that the chronic congestion and disability incident to ulcer formation undoubtedly predispose these patients to flatfoot, and the breaking down of the plantar arch is associated with the familiar pain common to this deformity. The removal of varicose veins in such cases may be successful to the extent of getting rid of the veins, but the expected relief from pain is not derived.

Journal of Experimental Medicine, Baltimore

August, XXIV, No. 2

44 *Chemotherapy *M* Tuberculosis. G. Koga.—p. 107.
45 Id. G. Koga.—p. 149.
46 Treatment of Tuberculosis with Cyanocuprol. M. Otani.—p. 187.
47 Treatment of Leprosy with Cyanocuprol. R. Takano, Tokyo, Japan.—p. 207.

44. See Current Comment in THE JOURNAL, Aug. 5, 1916, p. 443.

Journal of Infectious Diseases, Chicago

August, XIX, No. 2

48 Nitrogen Metabolism of Bacteria. H. J. Sears, San Francisco. —p. 105.
49 *Myxoma-Like Growths in Heart Due to Localizations of Spirocheta Pallida. A. S. Warthin, Ann Arbor, Mich.—p. 138.
50 Experimental Cholera Carriers. O. Schöbl, New York.—p. 145.
51 *Bacteriologic Findings in Ozena. H. C. Ward, Detroit.—p. 153.
52 Comparative Study of Colon Bacilli Isolated From Horse, Cow and Man. T. J. Murray, Lafayette, Ind.—p. 161.
53 *Immune Reactions in Scarlet Fever. G. F. Dick and G. R. Dick, Chicago.—p. 175.
54 Anaphylaxis Reactions Between Proteins From Seeds of Different Genera of Plants. Biologic Reactions of Vegetable Proteins. H. G. Wells and T. B. Osborne, New Haven, Conn.—p. 183.
55 Cases of Generalized Fatal Blastomycosis, Including One in Dog. C. C. MacLane, Chicago.—p. 194.
56 Application of Pure Line Concept to Bacteria. L. J. Cole and W. H. Wright, Madison, Wis.—p. 209.
57 Different Types of Streptococci and Their Relation to Bovine Mastitis. G. Mathers, Chicago.—p. 222.

58 *Hemolytic Streptococci Found in Milk. Their Significance and Their Relation to Virulent Streptococci of Human Origin. D. J. Davis, Chicago.—p. 236.
59 Certain Nonspecific Reactions Obtained with Antigens Made From Bacteria Grown on Serum Media. P. K. Olitsky and E. Bernstein, New York.—p. 253.
60 *Bacillemia in Tuberculosis as Shown by Examination of Postmortem Clots From Heart. U. F. Wilson, Ann Arbor, Mich.—p. 260.
61 *Tubercle Bacilli in Heart Clots in Acute Miliary Tuberculosis Complicating Chronic Lymphatic Myelogenous Leukemia. R. R. Dieterle, Ann Arbor, Mich.—p. 263.
62 Multiple Pipet for Complement Fixation Test. J. M. Buck, Washington.—p. 205.

49. **Myxoma-Like Growths in Heart.**—In *five* cases of congenital syphilis of infants referred to by Warthin, round translucent nodules were found in the myocardium, appearing to the naked eye as myxoma-like growths. Three cases were newborn infants dying a few days after birth, one was a child 14 months old, and one a child 18 months old. Of these cases four presented signs of syphilis and showed the presence of spirochetes in other organs and tissues; while one showed syphilis only in the myocardium. The myxoma-like nodules occurred in all cases in the anterior wall of the left ventricle, either near the apex or near the ventricular septum. In one case a similar nodule was found on the posterior wall of the left ventricle. In three cases there were two distinct nodules in the anterior wall of the left ventricle, one just above the apex, the other higher, over the septum. The nodules, which appeared to be nearly round or ovoidal, spherical on section, were all elevated above the general level of the epicardium. The largest were 1 cm. in diameter; the smallest was 5 mm. They extended entirely through the heart wall from epicardium to endocardium, projecting inwardly as well as outwardly on the epicardial surface. In all respects they resembled small myxomas, and the first ones seen were at first sight so regarded. The hearts of the five infants were much enlarged, dilated and hypertrophic, the walls of the left ventricle being two or three times thicker than normal. On microscopic examination these round translucent areas were found to consist of an edematous gelatinous connective tissue, showing remains of atrophic muscle fibers, especially at the periphery.

51. **Bacteriologic Findings in Ozena.**—Fifty well authenticated cases of typical atrophic rhinitis, the majority of which presented ozena conditions were studied bacteriologically by Ward with the following results: Diphtheroids, 43 cases; staphylococci, all varieties, 37 cases; *B. mucosus-capsulatus*, 30 cases; Perez' bacillus, 22 cases; streptococci, all varieties, 20 cases; *B. proteus*, all varieties, 20 cases; pneumococci, 20 cases; *B. pyocyaneus*, 12 cases. The author is not ready to accept Perez' bacillus as being the most important etiologic factor in ozena.

53. **Immune Reactions in Scarlet Fever.**—Complement deviation and cutaneous tests made by Dick failed to demonstrate any specific scarlatinal virus or antigen in the blood serum or in extracts of spleen or lymph glands. Fixation tests with throat mucus as antigen gave in one instance a weak fixation of complement with the serum of a convalescent scarlatinal patient. The toxicity of human blood serum for guinea-pigs is increased during the acute stage of scarlatina. Positive Wassermann reactions in scarlet fever obtained with the acetone insoluble portion of alcoholic heart extract, the author believes, are strongly suggestive of syphilis.

58. **Hemolytic Streptococci Found in Milk.**—Hemolytic streptococci having a wide clear zone, Davis says, occur commonly in both pasteurized and unpasteurized (certified) milk. These strains vary among themselves. They are more resistant to heat than human strains of hemolytic streptococci, and possess little or no virulence for rabbits, therefore in all probability none for man. They rapidly acidify and coagulate milk and grow well at 20 C. They form short or long chains, but as seen in milk often appear in pairs or a chain of few elements. While they are definitely hemolytic (Type B. Smith and Brown), the characteristics of the hemolytic zone on plates may vary in certain respects. The milk strains are different from certain strains of hemolytic streptococci found at times in diseased udders in cows. These latter resemble the strains of hemolytic streptococci from human sources, and are virulent for rabbits. In Davis' opinion there is no reason to consider that these organisms have any sanitary significance. The importance, however, of certain types of hemolytic streptococci in relation to epidemics of sore throat makes it necessary to study carefully all such organisms in milk. By itself the hemolytic property has no more value for identification purposes than many other characteristics, but is greatly important on account of the practical value of the blood-agar-plate method as a means of initial separation of human type strains from the many strains of nonhemolytic and feebly streptococci found in milk.

60. **Bacillemia in Tuberculosis Shown by Postmortem Clots from Heart.**—Wilson examined blood clots from the heart in a case of generalized miliary tuberculosis in which the dissemination was extreme and the tubercles relatively young. The patient, a woman of 52 years of age, became ill about Oct. 21, 1914, with a feeling of unusual fatigue, fever and slight chilly sensations, increasing toxemia, rapidly progressing anemia, weakness and dyspnea, without any signs of localized disease. Death took place on November 29. (Many lesions of tubercle bacilli were found at the necropsy.) The white clots and blood found in the right side of the heart were fixed in mercuric chlorid, carefully washed, and embedded in paraffin. The sections were floated on warm carbolfuchsin without removal of the paraffin, decolorized, and counterstained with methylene blue, washed, dried on the slide, the paraffin removed by warming and the use of xylene, and the sections mounted in balsam. These stained sections were then carefully searched for tubercle bacilli. Only four typical slender and beaded acid-fast bacilli were found in the blood clot sections. Sections of the tuberculous lesions in the organs stained in the same manner showed the presence of similar acid-fast bacilli in enormous numbers in the focal necroses. If the other nine-tenths of the heart blood and clot not examined contained tubercle bacilli in the same proportion as the one-tenth examined, then the entire number contained in the heart blood at time of death would be forty or less. In this case, as the disease was in a most acute and severe form and the organisms were being generalized throughout the body in large numbers, the number of bacilli found in the blood at any given moment would have to be relatively small, and the chances for demonstrating their presence by stained smears, cultures, or animal inoculation could not be very favorable. In milder cases, and in cases of chronic pulmonary tuberculosis, Wilson says, the chances for such a diagnostic demonstration of the bacilli in the circulating blood would seem to be very small indeed.

61. **Tubercle Bacilli in Heart Clots in Miliary Tuberculosis.**—A case of primary tuberculosis of the cervical lymph nodes and a widely disseminated miliary tuberculosis (skin, endocardium) was examined by Dieterle. The case was one of chronic lymphatic myelogenous leukemia with secondary tuberculosis. Four tubercle bacilli to sixty slides, or 1 to 15, were found in the venous blood of the right heart.

Journal of Medical Research, Boston

July, XXXIV, No. 3

63 *Changes in Superior Cervical Sympathetic Ganglia Removed for Relief of Exophthalmos. L. B. Wilson and L. Durante, Rochester, Minn.—p. 273.
64 *Bacteriologic Aspect of Abderhalden Test. D. Rivas and A. C. Buckley, Philadelphia.—p. 297.
65 Cytologic Analysis of Shock. D. H. Dolley, St. Louis.—p. 305.
66 *Organic Depression of Nerve Cell Produced by Prolonged Ether Anesthesia. E. E. Butler, St. Louis.—p. 325.
67 *Experimental Nephropathy From Some Bacterial Poisons. J. L. Stoddard and A. C. Woods, Boston.—p. 343.
68 *Studies on Paratyphoid Enteritidis Group. Xylose Fermentation for Differentiation of B. Paratyphosus "A" From Other Members of Paratyphoid Enteritidis Group. C. Krumwiede, Jr., J. S. Pratt and L. A. Kohn, New York.—p. 355.
69 Double Primary Abdominal Pregnancy in Dog. E. W. Goodpasture, Boston.—p. 359.
70 Use of Brilliant Green and Modified Endo's Medium in Isolation of Bacillus Typhosus From Feces. H. C. Robinson and L. F. Rettger, New Haven, Conn.—p. 363.

71 *Classification of Streptococci. W. L. Holman, Pittsburgh.—p. 377.
72 *Iodin Content of Foods. E. B. Forbes, F. M. Beegle, C. M. Fritz, L. E. Morgan and S. N. Rhue.—p. 445.
73 *Is B. Abortus (Bang) Pathogenic for Human Beings? L. H. Cooledge.—p. 459.
74 *Injection of Hemoglobin in Man and Its Relation to Blood Destruction, with Especial Reference to Anemias. A. W. Sellards and G. R. Minot, Boston.—p. 469.
75 Fracture of Arteries. O. Klotz, Pittsburgh.—p. 495.

63. **Changes in Cervical Sympathetic Ganglia.**—This investigation is based on a study in fixed tissue of the pathologic changes in cervical sympathetic ganglia removed at operation from sixteen patients with hyperplastic toxic goiter. It appears that definite histologic changes do occur in the cervical sympathetic ganglia in hyperplastic toxic (exophthalmic) goiter. These histologic changes consist of various stages of degeneration, namely: (*a*) hyperchromatization, (*b*) hyperpigmentation, (*c*) chromatolysis and (*d*) atrophy, or (*e*) granular degeneration of the nerve cells. All of these are but successive steps in degeneration, which, if uninterrupted, proceed to the complete destruction of the ganglion cells affected. Not all of the ganglion cells in any of the ganglia examined were so completely destroyed as to render improbable their return to normal under favorable conditions. There is some evidence that in ganglia from cases clinically improved some of the cells have partially or wholly recovered. Some of the ganglia contain cells resembling the partially differentiated cells in the ganglia of infants. Accompanying the more advanced changes in the ganglion cells are similar degenerative changes in the nerve fibers, and an increase of connective tissue throughout the ganglion, but especially in the outer and middle coats of the vessels, and in the periganglionic tissue. In general, the pathologic changes in the cervical sympathetic ganglia are parallel to the stage and intensity of the symptoms of hyperthyroidism, and to the hyperplastic and regressive changes in the thyroid.

64. **Bacteriologic Aspect of Abderhalden Test.**—Analyzing the results of the work done by Rivas and Buckley it would seem as if the ferment claimed by Abderhalden to be present in the serum of pregnant woman, if present at all, has no appreciable power of digesting placental tissue. The irregularity and the unreliability of the test in the hands of others is due to technical errors; the more exact the technic becomes, the greater the number of negative results obtained, and the more evidence of the fallacy of the test.

66. **Organic Depression of the Nerve Cell.**—According to Butler ether anesthesia produces certain definite anatomic changes in nerve cells of dogs. The severity of the anatomic changes in the nerve cell appears to be in direct relation to the length of the anesthesia, allowance being made for individual variations. An anesthesia of several hours' duration for several successive days produces almost the same degree of depression in the nerve cells as a continuous one of the same number of hours. A state of collapse results from ether anesthesia of eight or more hours' duration. This state of collapse is coincident with profound depression, and is considered to represent the end of constitutional effect of a diffusely acting depressant.

67. **Experimental Nephropathy from Bacterial Poisons.**—In the course of experiments to test the possibility of producing iritis in rabbits by the intravenous injection of some bacterial poisons, kidney lesions were discovered by Stoddard and Woods. Staphylococci and streptococci were injected. They produced a type of epithelial degeneration in the kidney, usually regarded as very acute. A tendency to a disintegrative degeneration of the epithelium of the first division of the proximal convoluted tubule may be common to all cases in which the products of destruction of bacteria reach the blood stream.

68. **Studies on Paratyphoid Enteritidis Group.**—In a series of cultures representing nearly all the pathogenic types of the paratyphoid enteritidis group, a group of cultures, including all the types agglutinatively, *B. paratyphosus* A failed to ferment xylose. The authors suggest, if the study of further strains shows that this is a constant characteristic, that the xylose negative types from man be considered the paratyphoid A group on cultural grounds. Within this cultural group are encountered strains, presumably pathogenic, which differ agglutinatively from the normal A type.

71. **Classification of Streptococci.**—The classification of streptococci made by Holman is based on the reactions on blood agar and the fermentation or nonfermentation of the carbohydrates, lactose, mannite, salicin, and inulin in serum broth. The first main division is made by the reactions on blood agar into the hemolytic and nonhemolytic forms. These are then redivided into the lactose and nonlactose fermenters. Each group is again divided into the mannit and nonmannit fermenters, and finally into those that ferment salicin and those that do not.

72. **Iodin Content of Foods.**—The data collected by Forbes and Beegle show that iodin is not by any means a constant constituent of foods, that when present it is usually found in exceedingly minute proportions, and that, in general at least, it must be regarded as an accidental constituent in the sense of standing in no vital relation to the growth of the food products. The presence of iodin in most vegetable food products clearly depends on the fact of its presence in the soil, and the lack of a selective capacity in the feeding of plants.

73. **Is Bacillus Abortus Pathogenic for Human Beings?**—Cooledge says he has no proof that *Bacillus abortus* (Bang) is pathogenic for human beings, although it is possible to cause antibodies for *Bacillus abortus* to appear in the blood serum of adults by feeding a milk which in naturally infected with *Bacillus abortus* and which contains the *Bacillus abortus* antibodies. Antibodies appearing as above apparently indicate a passive immunity due to the absorption in the large intestine of the antibodies present in an infected milk.

74. **Injection of Hemoglobin in Man.**—The results reported by Sellards and Minot merely demonstrate that the injection of hemoglobin offers a safe and satisfactory method for studying the metabolism of the blood pigments in man. Hemoglobin in solution was injected intravenously, in sufficient quantity to produce a marked hemoglobinuria in the first specimen of urine voided after injection. The amount did not produce subjective symptoms in the cases which developed hemoglobinuria, thirteen in number, except in one instance in which an unusually large injection was given. As compared with the normal distinctly less hemoglobin was required to produce hemoglobinuria in patients in whom there was evidence of increased blood destruction, more especially in pernicious anemia. In secondary anemia due to hemorrhage, or in cases in whom there was no evidence of excessive blood destruction, as a rule no hemoglobinuria resulted after the injection of amounts which regularly caused marked hemoglobinuria in active cases of pernicious anemia. In the cases which have been studied, the tolerance to hemoglobin, namely, the amount of hemoglobin required to produce hemoglobinuria, bore no relation to the red blood count, but it did bear a direct relation to the amount of blood destruction taking place within the body.

Journal of Parasitology, Urbana, Ill.

June, II, No. 4

76 Significance of Certain Natural Flagellates of Insects in Evolution of Disease in Vertebrates. H. B. Fantham and A. Porter, Cambridge.—p. 149.
77 Revision of Genus Arhythmorhynchus. H. J. Van Cleave, Urbana.—p. 167.
78 Encysted Larva of Lung Distome. S. Yoshida.—p. 175.
79 Cylindrotenia Americana Nov. Spec. From Cricket Frog. M. E. Jewell.—p. 181.
80 Effect of Tick Bites on Man. D. McCaffrey, Princeton, B.C.—p. 193.

Laryngoscope, St. Louis

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81 Abscess of Lung Following Operation on Tonsils and Upper Air Tract. C. W. Richardson, Washington.—p. 1001.
82 Lung Abscess Following Tonsillectomy. C. G. Coakley, New York—p. 1008.
83 Indications for Labyrinth Operation; Report of Three Cases of Meningitis. C. E. Perkins, New York.—p. 1012.
84 Value of Roentgen Rays in Diagnosis of Diseases of Accessory Sinuses, With New Technic for Sphenoid. G. E. Pfahler, Philadelphia.—p. 1018.

85 Report of Three Cases of Salivary Calculi. W. H. Haskin, New York.—p. 1031.
86 Accessory Sinuses of Nose in Their Relation to Cranial Nerves. L. G. Kaempfer, New York.—p. 1034.
87 New Method of Opening Drum Membrane in Purulent Otitis Media by Means of Trephine. I. Guttman, New York.—p. 1043.

Medical Record, New York

August 5, XC, No. 6

88 Clinical Methods of Measuring Acidosis. J. R. Williams, Rochester.—p. 223.
89 Connecticut, Student of Tuberculosis. S. J. Maher, New Haven, Conn.—p. 229.
90 Complement Fixation in Pulmonary Tuberculosis. A. Meyer, New York.—p. 232.
91 Syphilis of Bladder. J. Pedersen, New York.—p. 235.
92 Drug Addicts and Their Treatment. T. D. Crothers, Hartford, Conn.—p. 238.
93 Painless and Shockless Childbirth. M. W. Kapp, San Jose, Calif.—p. 241.

Nebraska State Medical Journal, Omaha

July, I, No. 1

94 Leukocyte Extract. J. S. Simms, North Platte.—p. 8.

New Mexico Medical Journal

July, XVI, No. 4

95 Renal Infections. F. F. Fadeley, Albuquerque.—p. 113.
96 Status of Physician Under Laws of State of New Mexico. L. O. Fullen, Roswell.—p. 117.

New Orleans Medical and Surgical Journal

August, LXIX, No. 2

97 *Practical Method of Minimizing Pain of Labor. H. W. Kostmayer, New Orleans.—p. 89.
98 Tetanus Experience in Charity Hospital for Ten Years. H. B. Gessner and D. Adiger, New Orleans.—p. 91.
99 Certain Phases of Syphilis in Negro Female From Standpoint of Medical Diagnosis. S. C. Jamison, New Orleans.—p. 96.
100 Case of Polymazia. J. A. Storck, New Orleans.—p. 98.
101 Clinical History of College of Medicine of Tulane University of Louisiana. J. Holt, New Orleans.—p. 101.
102 Résumé of Present Knowledge of Functions of Menstruation with Reference to Internal Secretion. M. A. Shlenker, New Orleans. —p. 105.
103 Pyelo-Ureterography as Aid in Diagnosis of Obscure Surgical Conditions of Kidney and Ureter. H. W. E. Walther, New Orleans.—p. 115.
104 *Schönlein's Disease. M. F. Meyer and H. T. Simon, New Orleans.—p. 120.

97. **Method of Minimizing Pain of Labor.**—The method used by Kostmayer is as follows: As soon as the pain of the first stage becomes definitely annoying, chloral is given in 10-grain dose and repeated in forty-five to sixty minutes, as indicated, as much as three doses being given, if necessary. When the character of the pain changes to the "bearing down" of the second stage, ⅙ grain of morphin is given as soon as this pain is severe enough to warrant it. It is rarely necessary to repeat the morphin, though this may safely be done after an hour or two. If labor is retarded in the least, or if in the judgment of the physician labor might safely be hastened, pituitary extract is given in graduated doses. As the presenting part begins to dilate the vaginal orifice, ether is given by the open-drop method at the beginning of each pain, and continued until the pain subsides.

104. **Schönlein's Disease.**—In the case cited by Meyer and Simon the arthritis, purpura, urticaria and angioneurotic edema occurred at practically the same time.

New York Medical Journal

July 29, CIV, No. 5

105 Medical Women. (To be concluded.) M. S. Macy, New York. —p. 193.
106 Anaphylactic Food Reactions in Skin Diseases. A. Strickler, Philadelphia.—p. 198.
107 Predisposing Factors in Infantile Paralysis. M. Talmey, New York.—p. 202.
108 Early Pulmonary Tuberculosis. R. Abrahams, New York.—p. 204.
109 Urinary Toxemia. W. H. Kinney, Philadelphia.—p. 208.
110 Tuberculosis Infection and Tuberculous Immunity. A. C. Geyser, New York.—p. 211.
111 Early Syphilis. O. L. Levin, New York.—p. 212.
112 Six Months' Work in Anesthesia. A. Vedin, New York.—p. 214.
113 Bursitis Subacromialis. H. F. Wolf, New York.—p. 217.
114 Unilocular Cyst of Kidney. M. Schulman, New York.—p. 218.
115 Laboratory Facts in Poliomyelitis. S. R. Klein, New York.—p. 219.

August 5, No. 6

116 Shoes, Physiologic and Therapeutic. D. D. Ashley, New York. —p. 241.
117 Herpes Cornea Febrilis. S. Theobald, Baltimore.—p. 247.
118 Management of Complications of Pregnancy. J. A. McGlinn, Philadelphia.—p. 248.
119 Syphilis and Tuberculosis in Same Lung. R. A. Keilty, Philadelphia.—p. 252.
120 Removal of Interstitial Fibromyoma. J. J. Sheehey, New York. —p. 253.
121 Nephritic Toxemia of Pregnancy. A. H. May, Buffalo.—p. 253.
122 Pathogenesis of Psoriasis. A. H. Cook, Hot Springs, Ark.—p. 255.
123 Medical Women. M. S. Macy, New York.—p. 257.
124 Some Orthopedic Principles in Pediatric Practice. S. W. Boorstein, New York.—p. 259.
125 Some Eye Symptoms of Diagnostic Value. J. J. Decker, New York.—p. 262.

Ophthalmology, Seattle

July, XII, No. 4

126 Miscellaneous Experiments on Efficiency of Eye Under Different Conditions of Lighting. C. E. Ferree and G. Rand, Boston. —p. 593.
127 State Legislation Concerning Wood Alcohol. F. Allport, Chicago. —p. 618.
128 Swimmers' Conjunctivitis. H. S. Gradle, Chicago.—p. 632.
129 Value of Accurate Localization of Steel in Eye and Orbit. C. C. Clement, Chicago.—p. 655.
130 Case of Contusio Bulbi. E. E. Blaauw, Buffalo.—p. 660.
131 American Method of Cataract Extraction. J. Santos-Fernandez, Havana, Cuba.—p. 667.
132 Intracapsular and Capsulotomy Operation for Senile Cataract. W. A. Fisher, Chicago.—p. 672.
133 Color Sense in Relation to Emotion of Sex. G. H. Taylor, Sydney, Australia.—p. 688.
134 Two Thousand Cases of Refraction Analyzed with Reference to Average Frequency and to Astigmatic Axis. H. C. Parker, Dubuque, Iowa.—p. 691.

South Carolina Medical Association Journal, Greenville

July, XII, No. 7

135 Five Successful Cases of Broncho-Esophagoscopy. E. W. Carpenter, Greenville.—p. 196.
136 Rupture of Uterus; Report of Case. W. L. Kirkpatrick, Pacolet. —p. 200.
137 Foreign Bodies in Nostrils and Ears of Children. L. O. Mauldin, Greenville.—p. 201.
138 Roentgen Ray in Diagnosis of Focal Infection. R. W. Gibbes, Columbia.—p. 206.

Vermont Medicine, Rutland

June, I, No. 6

139 Relation of Ductless Gland Activity to Health. J. H. Blodgett, Bellows Falls.—p. 157.
140 Chronic Rhinitis. W. G. Ricker, St. Johnsbury.—p. 165.

July, No. 7

141 Treatment of Chronic Interstitial Nephritis. F. W. Harriman, Montpelier.—p. 189.
142 Study of Fifty-Five Cases of Malignant Disease of Breast Treated by Operations. J. B. Wheeler, Burlington.—p. 192.

FOREIGN

Titles marked with an asterisk (*) are abstracted below. Single case reports and trials of new drugs are usually omitted.

Archives of Radiology and Electrotherapy, London

July, XXI, No. 2

1 Cases of Bone Injuries Caused by Bullets, Shell Fragments and Shrapnel. J. D. Morgan.—p. 41.
2 Appendicitis: Its Roentgen Diagnosis. G. Vilvandré.—p. 49.
3 Reaction of Degeneration in Medical Literature. N. H. M. Burke.—p. 54.

British Medical Journal, London

July 15, II, No. 2898

4 Some Principles and Problems Related to Treatment of Gunshot Fractures. H. Groves.—p. 65.
5 Reconsideration of Principles and Methods of Hugh Owen Thomas. (To be continued.) J. L. Thomas.—p. 71.
6 Extension Splint for Fractures of Humerus. D. Hingston.—p. 72.
7 *Method of Treatment of Shell Shock. E. T. C. Milligan.—p. 73.
8 Gunshot Wound of Spinal Cord and Trachea; Recovery. G. W. Thompson and G. W. Stanley.—p. 74.
9 Eusol and Other Methods of Wound Treatment. C. W. Duggan. —p. 74.

7. **Treatment of Shell Shock.**—During chloroform administration there is a stage before the involuntary struggling stage when a patient is highly susceptible to suggestion. It is while the patient is in this stage that, Milligan says,

suitable suggestion and stimulation should be used. The treatment must be conducted in a quiet room, apart from other patients. Chloroform is slowly administered, and suggestion carried out by the anesthetist when the patient has reached the required stage.

Dublin Journal of Medical Science

July, III, No. 535

10 Camp Jaundice. T. G. Moorhead and G. D. Harding.—p. 1.
11 Metabolism of Senile Decay. E. Wooton.—p. 9.
12 Clinical Report of Rotunda Hospital for One Year, Nov. 1, 1914, to Oct. 31, 1915. W. J. Smyly, R. D. Purefoy and E. H. Tweedy.—p. 21.

Lancet, London

July 15, II, No. 4846

13 Natural History of Septic Wounds. K. Goadby.—p. 89.
14 *Digitalis in Aortic Incompetence. S. Taylor.—p. 96.
15 *Case of Abdominal Pregnancy, Probably Primary. F. J. McCann.—p. 98.
16 Indications and Contraindications in Pneumothorax Treatment of Pulmonary Tubercle. C. Riviere.—p. 101.
17 Case of Oblique Hemianopia from Wound of Optic Chiasma. P. Stewart and A. D. Griffith.—p. 104.
18 Early Ether Analgesia. D. P. D. Wilkie.—p. 106.
19 Two Cases of Thoracic Aneurysm. G. J. Conford.—p. 107.
20 Case of Perforated Typhoid Ulcer Operation; Acute Obstruction; Operation, Recovery. F. M. Neild.—p. 107.

14. **Digitalis in Aortic Incompetence.**—Aortic incompetence by itself, Taylor says, is not only a most serious lesion, but its gravity and its discomfort are enhanced if the mitral valve is holding and competent. He claims to have records of many cases, in early middle age, who have led, and who still lead, lives of comparative comfort, they having the double lesion; while, on the contrary, others having only an aortic incompetence, suffer dyspnea, faintings and other discomforts, and are incapable of any beyond the slightest exertion. Taylor records a number of cases having aortic regurgitant disease who have survived to old age and to whom digitalis has never been given since he has had them under observation, now some ten to fifteen years.

15. **Abdominal Pregnancy, Probably Primary.**—McCann records the case of a woman, aged 35, tertipara, who had an abdominal pregnancy that went to term. The waters were said to have come away. There had been very slight labor pains. She complained of pain in the epigastrium. There was a hard mass in the left side which suggested the fetal head. No movements of a fetus could be felt, although she stated that she felt movements distinctly up till the preceding day. On vaginal examination the os was only enough dilated to admit the tip of one finger. No presenting part could be felt and there was no external hemorrhage, her chief complaint being epigastric pain, vomiting and sleeplessness. Finally, about two teaspoonfuls of blood passed per vaginam. No decidua had been expelled. The abdomen was much distended and there was considerable venous engorgement visible in the abdominal walls. The abdomen was extremely tender on palpation, especially on the left side over the position of the fetal head and at other points where the fetus was palpable. It was however, difficult to make a detailed examination of the abdomen because of the extreme tenderness as well as the intestinal distention. The outline of the uterus could not be defined. The breasts were somewhat atrophied and in appearance were not suggestive of pregnancy, and no fluid could be expressed from either nipple. On vaginal examination well marked venous distention and blue discoloration were noted. The cervix was much softened and drawn upward, and the os uteri readily admitted the finger. No presenting part could be felt on vaginal examination.

An offensive purulent discharge issued from the vagina and the general condition of the patient suggested the presence of a severe toxemia. A free median incision was made, and as soon as the peritoneum at the upper part of the incision was opened a small quantity of black blood clot presented. On enlarging the incision the umbilical cord, of a dark slate color, bulged into the wound. The hand was introduced and a rapid exploration made. The fetus was grasped by the legs and withdrawn without difficulty. The uterus was found to be enlarged to about the size of a five months' pregnancy, with a well-developed placenta, to which the umbilical cord was attached, firmly inserted in its posterior surface slightly to the right side. A strong odor of ammonia was perceptible during the operation suggestive of the presence of urine in the peritoneal cavity, although the amount of intraperitoneal fluid was inconsiderable. The intestines were carefully packed off with sponges and a rapid supravaginal hysterectomy performed, leaving the appendages in situ. The placental attachment seemed to fade away gradually on the lower part of the uterus, leaving the floor of Douglas' pouch covered only by the remains of the amniotic sac. Further remnants of the amniotic sac, brownish black in color, were found on the posterior abdominal wall, the uterovesical pouch, the descending and pelvic colons, the transverse colon and omentum, the ascending colon, and the peritoneum lining the abdominal wall. Although the fetus was dead, yet there were no adhesions of intestine or omentum to prevent its rapid and easy extraction.

The fetus of a female weighing 7 pounds had reduced full development within the abdominal cavity of the mother. It measured 14 inches from the vertex to the coccyx. The trunk and limbs were perfectly developed, but the head was enlarged, suggesting early hydrocephalus. The umbilical cord, 15 inches in length, was normally developed and was attached to a large well-formed placenta. The main placental mass was perched like a cap on the upper and back part of the uterus, while it spread laterally outward and still more downward so as to hide completely the uterine surface.

Practitioner, London

July, XCVII, No. 1

21 Effects of Recent Legislation on Sickness and Accident Claims. J. Collie.—p. 1.
22 Treatment of Diabetes Mellitus by Alimentary Rest. O. Leyton.—p. 24.
23 Recent Work on Ophthalmology. L. V. Cargill.—p. 44.
24 Reaction of Child to Faulty Environment. H. C. Cameron.—p. 61.
25 Methods Employed in Roentgenologic Department in Military Hospital. R. J. Reynolds.—p. 73.
26 Treatment of Infected War Wounds, with Special Reference to Use of Antiseptics, Warmth and Fresh Air. P. R. Cooper.—p. 80.
27 Extreme Case of Dropped Transverse Colon in Young Girl. J. F. Rey.—p. 85.
28 Symmetry in Disease. F. Tresilian.—p. 88.
29 Bullet Wound of Thorax, Presenting Unusual Features. R. J. G. Parnell.—p. 92.

Bulletin de l'Académie de Médecine, Paris

June 27, LXXV, No. 26, pp. 759-789

30 Prophylaxis of Venereal Diseases. (Sur la lutte contre les maladies vénériennes et la syphilis.) Gaucher and others.—p. 761.
31 *Disturbances in Vision with War Wounds of the Orbit Sparing the Eyeball. (Des désordres de l'appareil visuel dans les traumatismes de l'orbite par armes à feu, avec conservation du globe oculaire; leur pathogénie.) Lagrange.—p. 771.
32 Contamination of Oyster Beds at Marseilles. (Analyse bactériologique des huitres vendues à Marseille.) A. Gigon and C. Richet.—p. 781.
33 Treatment of Hay Fever. (Le traitement du rhume des foins.) P. Bonnier.—p. 785.
34 Standardization of Clinical Thermometers. (Note sur l'exactitude des thermomètres médicaux et leur contrôle.) P. Woog.—p. 787.

31. **Injury of the Orbit Sparing the Eyeball.**—Lagrange analyzes the various factors at work as he studied them in 179 cases of fracture of the orbit, citing a number of typical cases from the five principal groups of such injuries.

Lyon Chirurgical

March-April, XIII, No. 2, pp. 213-404

35 *Pathologic Anatomy of Direct Lesions from Fracture of the Skull in War. (Anatomie pathologique des lésions immédiates dans les fractures pénétrantes du crâne, par projectiles de guerre.) A. Latarjet.—p. 213.
36 *Importance of Early Operative Treatment of War Wounds of the Skull. (Sur les plaies du crâne par projectiles de guerre, à l'avant.) L. Sencert.—p. 283.
37 *Treatment of War Wounds of the Skull. (Considérations sur le traitement des blessures du crâne par projectiles de guerre.) X. Delore and L. Arnaud.—p. 328; (Traitement des plaies du crâne dans les formations de l'avant.) G. Cotte.—p. 358; (Les plaies pénétrantes du crâne à l'avant.) G. Tisserand.—p. 380.
38 Indications for Operating for War Wounds of the Skull. A. Rendu.—p. 387.

35. **Gunshot and Shell Wounds of the Skull.**—This entire issue is devoted to penetrating wounds of the skull. Latarjet devotes sixty-nine pages to a study of the direct and immediate injury of the skull, showing that this is almost invariably so extensive that there may be severe injury of the brain when the skull does not seem to have been much damaged. His forty-nine illustrations show the various types of wounds, comparing the lesion found in the brain with the aspect of the skull before it was opened. The sequesters from an anteroposterior or oblique fracture were generally driven in deep; some were found 8 and 10 cm. from the surface. With a tangential fracture the sequesters were close to the surface. In all the cases the extent of the brain injury is greater than the injury of the skull. A fissure is liable to be found wider and deeper farther along. In one case a fissure started 3 cm. beyond the trephine hole and curved forward below, while another fissure was 8 cm. long. Neither had been discovered at the trephining done for a nonpenetrating fracture of the parietal bone. The man died from meningitis a week later; evidently infection had entered by the fissures.

Latarjet advises to open up the beginning of the fissure and work a wick wet with tincture of iodin between the dura and the skull, following the track of the fissure for some distance, and thus excluding them from the main focus. The fissures are formed more or less by the tearing open of the sutures. Subarachnoid hemorrhage is another reason for ample trephining, at least to the peripheral limits of the brain lesion. His practice now is to make the trephine opening not according to the injury of the dura but according to the damage done to the brain, that is for 2 or 3 mm. beyond the limit of the lesions of the pia. Visible sequesters are removed and the brain is explored very delicately and lightly tamponed with a tampon wet with weak tincture of iodin. He then seeks to wall off the focus by working very thin wicks, wet with the same, between the skull and the dura. In case of fissure the wick is worked along under it as far as possible. Another set of wicks is then worked between the dura and the brain, to form a complete wall around the focus and for more than 1 c.c. beyond. This crown of wicks aids in draining subarachnoid hemorrhage while it keeps septic matters from spreading from the focus, and starts the formation of adhesions to limit this still further. Gauze is then spread over the whole. The next day the dressing is renewed but the wicks are not disturbed. They are merely moistened anew with the weak tincture of iodin on a tampon; merely the central gauze over the focus is renewed. The wicks are not changed until the sixth or eighth day. None of his patients thus treated have died from primary meningitis.

36-37. **Operative Treatment for Wounds of the Skull.**—Sencert analyzes his experiences with 234 gunshot and shell wounds of the skull during the first ten months of the war. An operation was done and the case traced in 163. All but 59 left the hospital in good condition, but the present status could be ascertained only in 71 instances. Of these 71 patients 25 per cent. died, practically all within three months after the operation. Of the 47 (75 per cent.) living, 5 have returned to active service at the front and 2 are doing barrack service. This 75 per cent. of permanent cures came to Sencert as a very comforting surprise, confirming him in the conviction that immediate and systematic intervention should be the invariable rule for wounds of the skull as affording the only chance for recovery.

Delore and Arnaud affirm the same, adding that immediate intervention, to forestall infection, is the only means of salvation. Tardy intervention should be formally rejected. A deep wound in the brain should be drained, but not with gauze. Gauze favors retention, sticks to the brain substance and permits meningo-encephalitis to develop; a small rubber drain is better to clear out the products generated in the depths of the wound. Recovery is by no means infrequent with this provided the skull is not fissured too extensively and that the cavity of the ventricles has not been damaged. If meningitis or encephalitis develops, lumbar puncture has both a diagnostic and therapeutic influence, and roentgenoscopy will reveal any foreign bodies present. Both the point where the projectile entered and where it left the skull should be trephined. If the dura is intact but the brain does not pulsate there is a hematoma below. If there is no pulsation with change of position, the dura should be incised at once. Secondary opening of the dura is risky, but immediate incision wards off compression of the brain and secondary irritation of the meninges. War wounds of the base of the skull are like those in civilian practice.

Cotte is also a partisan of immediate incision of the intact dura when contusion or hemorrhage below is suspected or seems probable. Tisserand reiterates that, aside from actual destructive lesions and fulminating hemorrhage, infection is responsible for the fatalities from skull wounds. Hence the wound should be made surgically clean at the first-aid station and an operation should follow at the earliest possible moment. In his 100 operative cases only one died of the 36 with intact dura, but 25 died of the 64 with the dura opened, including 2 whose dura he had incised as there was no pulsation in the brain. This has converted him to the view that the intact dura should be respected.

Paris Médical

July 8, VI, No. 28, pp. 37-52

39 *Epidemic Pneumococcus Septicemia in Persons from the Tropics. (La pneumococcie épidémique des tropicaux.) P. Carnot and de Kerdrel.—p. 37.
40 *Abortive Treatment of Infection in War Wounds. (Le traitement abortif de l'infection des plaies de guerre.) R. Gaultier.—p. 43.
41 Tardy Localized Tetanus in Muscles of Abdomen and Chest. P. L. Marie.—p. 49.

July 15, No. 29, pp. 53-68

42 Transportation of Wounded in Aeroplanes. R. Blanchard.—p. 53.
43 *Paratyphoid Ulceration and Proliferating Colitis. F. Rathery.—p. 55.
44 Putrid Infection with Multiple Gangrenous Embolism; Two Cases. Degny.—p. 62.
45 *Mental Derangement in Paratyphoid A Infection. (Sur les déterminations psychiques des paratyphoides.) P. Merklen.—p. 64.

39. **Epidemic Pneumococcus Septicemia.**—Carnot and de Kerdrel comment on the peculiar susceptibility to pneumococcus infection of persons in the tropics or recently leaving there. Among the troops now in France from the French colonies in Annam and the Senegal, they have encountered over a hundred cases of what seems to be a pneumococcus syndrome about half way between ordinary pneumonia and experimental pneumococcus septicemia. It is evident that this pneumococcus septicemia is one of the dangers to be reckoned with in transplanting persons from the tropics. Special and general measures to ward off the pneumococcus should be enforced. It affects such persons differently from Europeans. (This article has several long gaps—one is over half a column long—showing merely blank paper where certain statements had been suppressed by the censor.)

40. **Modern Treatment of War Wounds.**—Gaultier has been studying with the microscope during the last four months the clinical evolution of wounds under the various methods of treatment in vogue. His research has confirmed the assumption that every war wound is infected to start with, and it has further demonstrated that the clinical findings, the aspect, etc., are not enough to tell what is going on in the wound. Its course cannot be estimated without the aid of the microscope, and this is an essential element in Carrel's technic. The originality of his method consists in constantly renewing the disinfectant used, ensuring that it reaches every point of the wound, with repeated bacteriologic control. This shows the exact moment when it is safe to close the wound, and this hastens the healing immeasurably and restores conditions to approximate normal much more completely. Gaultier gives an illustration of his improvised laboratory such as can be fitted up anywhere in connection with a surgical service, with a microscope and some slides and stains. He was unable to give Delbet's pus-culture method a thorough trial as the wounds healed without suppuration under the Carrel treatment, and no pus could be obtained for examination.

43. **Paratyphoid Colitis.**—Rathery had over 1,000 paratyphoid cases in his service during the past year, and over

4,500 cases of typhoid (Zuydcoote hospital). Ulcerative and proliferating colitis was observed in some of the paratyphoid cases. The mucomembranous form was most common, but there occurred also a dysenteriform colitis, and the ulcerations sometimes perforated. All the cases observed were of the B type. In the mild and moderate cases, enemas of methylene blue or silver nitrate answered the therapeutic purpose but all measures failed in the more serious cases. The two men with the dysenteriform type died four or five months after the close of the paratyphoid fever, the persisting diarrhea wasting each patient to a skeleton. In some of the cases the colitis first made itself manifest by perforation of an ulcer. In others the clinical picture was that of dysentery.

45. **Paratyphoid Delirium.**—Merklen also has encountered a number of cases of paratyphoid with as severe a course and as threatening complications as he has ever known with genuine typhoid. In a group here described there was actual mania or at least complete delirium and loss of memory. The paratyphoid was of the A type in all these four acute toxi-infectious psychoses. All the patients recovered. Merklen noticed, however, that there was some predisposing mental trait or taint in each case. "Cultivation of the blood revealed the microbe, but it was the microbe that revealed the mental taint."

Presse Médicale, Paris

July 3, XXIV, No. 37, pp. 289-296

46 *Encysted Form of Amebas in the Stools, and Their Importance in the Diagnosis and Pathogenesis of Dysentery. (Les kystes amibiens.) P. Ravaut and G. Krolunitski.—p. 289.
47 Serodiagnosis of Typhoid and Paratyphoid. A. Cade and E. Vaucher.—p. 291.
48 *Preventive Treatment and Dangers of Talipes Equinus after War Wounds of the Legs. (Notes sur le traitement préventif et l'importance de l'équinisme chez les blessés de guerre.) P. Audion.—p. 292.

July 6, No. 38, pp. 297-304

49 *Abscess of Liver and Trench Diarrhea. (Abcès du foie et diarrhée des tranchées.) F. Rathery and L. Bisch.—p. 297.
50 First Aid for Wounds of the Skull. (A propos du traitement primitif des plaies du crâne.) B. Cunéo.—p. 299.
51 *Extraction of Projectiles in the Lungs. (Règles de l'extraction des projectiles intrapulmonaires à la pince, sous écran.) P. de la Villéon.—p. 300.

July 13, No. 39, pp. 305-312

52 Principles for the Rational Diagnosis of Pulmonary Tuberculosis. E. Rist.—p. 305.
53 Localization and Extraction of Projectiles in the Brain. E. J. Hirtz.—p.307.

46. **Ameba Cysts in Diagnosis of Dysentery.**—Ravaut remarks that amebas are found in the stools only during a comparatively brief phase of the dysentery, and they are liable to escape detection. On the other hand, the encysted form of ameba is found constantly in the stools through the entire course of the disease. They are readily shown up by the microscope when a scrap of stool is examined, or the specimen can be stained with hematoxylin after fixation with the fumes of osmic acid. Several may be found on one slide or many slides may have to be examined before one is discovered. Their elimination may be hastened with a purgative or by intravenous injection of 0.01 or 0.04 gm. cyanid of mercury. The cysts persist intact in the stools for at least two days and they can be kept longer by diluting the scrap of stool with formaldehyd. They are small globules with a mother-of-pearl reflection and from one to four nuclei in each. The protoplasm is limpid but with a dull reflection like porcelain, and it usually contains groups of rods or irregular masses of a refracting substance that has been described under the name chromidium. Two illustrations show these cysts and those of the colon ameba which are very much larger and have from one to eight nuclei. Among the 169 cases of dysentery at the hospital in his charge in the north of France, living amebas were found in forty-seven, and cysts alone in ten cases. The cysts did not appear in the stools until between the third and the sixteenth day and only on frequently repeated examination. Most of these patients had been under treatment for years for supposed different ailments. The discovery of the parasites and appropriate treatment soon cured the whole trouble. Watching out for cysts is also of great assistance in estimating the effect of treatment from day to day. He has found a combination of arsenic and emetin more effectual than the latter alone. In examining the attendants and patients at the hospital, for carriers, ameba cysts were found in thirty-four and only ten of these were free from dysenteric symptoms. Thus there were 5 per cent. healthy carriers. The figure for healthy carriers in the tropics is only 10 per cent. Before the war, amebic dysentery was rare in France. Landouzy could find in 1914 only fourteen cases recorded in the course of nine years, but Ravaut has personally encountered twenty-five cases in the last few weeks, all in persons who have never been out of the country. The ameba proper is frail and short-lived but in the encysted form it is hardy and can long lie latent, resisting the digestive juices, and when favorable conditions appear it changes into the ameba proper and thus generates dysentery. Not only those who have had dysentery and those with abortive attacks but the healthy carriers of ameba cysts have been sowing them during the war, the conditions of warfare contributing to propagate the infection as these persons—wounded, sick, convalescent, on furlough, etc. —may have spread the parasites all over the country.

48. **Talipes Equinus as Sequel of Wound of the Leg.**—Audion calls attention anew to the grave deformity almost certain to be entailed if men wounded in the leg are allowed to walk on the toe of the foot and hold the foot at other times in this pointed position, which speedily becomes permanent talipes equinus. He says that if we look at our own feet in a mirror as we walk, we will see that at every step the foot takes the talus position more or less. This is the position that should be fostered, the foot immobilized or being spared should be held in a medium talus, and none should be allowed to step on the toes of the foot. If the talipes equinus has become incorrigible, a course of plaster casts may be necessary to overcome the deformity.

49. **Trench Diarrhea.**—Rathery and Bisch relate that emetin has a surprisingly favorable action in trench diarrhea. This sustains the assumption that the trouble is actual dysentery, and this was further confirmed by the discovery of abscesses in the liver in four of their cases. The clinical picture was that of ordinary dysenteriform colitis dragging along from one to four months, and no amebas were found in the stools or pus from the liver. Two of the four men had lived in northern Africa but the others had not. Roentgenoscopy gave instructive findings in each case, showing in one an accumulation of fluid both below and above the diaphragm, the abscess in the liver being accompanied by a pleuritic effusion. The men all promptly recovered after evacuation of the abscesses.

51. **Projectiles in the Lungs.**—De la Villéon reports fifty-one recoveries in fifty-one cases in which he removed the projectile from the lungs under roentgenoscopy. This success was due, he thinks, to his taking the seven precautionary measures which he here describes: locating the projectile with precision; using bullet-seizing forceps with fenestrated blades; introducing them at an angle never less than 45 degrees in relation to the shadow cast by the projectile; working in sound tissue, and avoiding the danger points of the intercostal vessels and the hilus. If the projectile is in the hilus, it is better to incise the lung without wasting time on the forceps, and this is preferable also when the projectile is very large. The parenchyma of the lung is so soft and so elastic that the blood and air vessels yield and spread apart of themselves as the blunt-edged forceps enters the tissue. The vessels spread apart, their contents are expelled, and the empty vessel collapses as the instrument advances. All his operations were done after some time had elapsed and the wound had quite healed. The projectile was found from 2 to 12 cm. below the surface, and the wound healed without fever. The patients were up and about by the third day.

Progrès Médical, Paris

June 20, XXXII, No. 12, pp. 93-104

54 *Disinfection of War Wounds. P. Barbarin.—p. 93.
55 *Protracted Cerebrospinal Meningitis Requiring Trephining-Puncture. F. Ramond.—p. 95.
56 *Treatment of Ulcers and Wounds that Refuse to Heal. (A propos des plaies atones.) F. Masmonteil.—p. 96.

57 Contributions of the Military School and Hospital of Val-de-Grâce to Medical History, especially to Internal Pathology. Bonnette. —p. 100.

July 5, No. 13, pp. 105-116

58 *Epidemic Cerebrospinal Meningitis. F. Ramond.—p. 105.
59 Mycosis from Scopulariopsis Koningi. A. Sartory.p. 107.
60 Plaster Bed for the Limb to Permit Removal after Compound Fracture. ("Le Plâtre circulaire" pour l'évacuation des blessés.(A. Bernard.—p. 108.
61 *Intravenous Injections of Isotonic Physiologic Solution Made with Sodium Citrate. M. Chaton.—p. 110.

54. **Disinfection of War Wounds.**—Barbarin has served during the war at a base hospital from 20 to 40 kilometers back from the front, and has had opportunity to note the effect of the disinfectants applied at the first dressing station, as well as in his own service. He insists on draining from the lowest point; this nullifies the action of the Carrel continuous irrigation technic, and he seeks to accomplish the same purpose in another way. He lays a pile of scraps of agar on a square of gauze, making a very loose bag of it by drawing up the edges and tying them together. This bag of agar is then fitted into the wound, the corners of the gauze projecting above and spreading out over the surface. A drain tube projects below at the lowest point of the wound. The agar is then profusely watered with Dakin's solution or other disinfectant. It swells and thus spreads the wound and opens up the recesses while bringing and holding the disinfectant against the tissues. The disinfectant is poured in anew every two or three hours or can be supplied by the drip method with a Carrel tube, one end set deep in the agar, the other projecting above the wound. He says in conclusion that the early disinfection possible with this simple means, which does not interfere with the transportation of the wounded, realizes results beyond the fondest dreams, the wounds healing infinitely earlier and more completely.

55. **Protracted Meningitis.**—Ramond has found that methylene blue injected by lumbar puncture scarcely ever finds its way, or only with difficulty, into the ventricles, and vice versa. He has tested this on the cadaver and on the living subject. Hence antimeningococcus serum injected by lumbar puncture cannot be expected to reach the ventricles in amounts sufficient to destroy the meningococci there. The infectious process continues to develop in the ventricle and keeps up the meningitis indefinitely, as in a case described. After a period of improvement under serotherapy, the symptoms returned, with progressive stupor, generalized rigidity, and sphincter and eschar troubles, suggesting involvement of the ependyma. After the forty-fifth day of prolonged meningitis, Ramond trephined and evacuated about 30 c.c. of an opalescent fluid from each ventricle, and injected 10 c.c. of antimeningococcus serum. There was marked improvement at once and the patient's mind was clear, he slept well and asked for food. But the torpor returned the next day, with death in coma the day after. Necropsy showed that the pus originated in the fourth ventricle but sank down by gravity, bathing the under surface of the cerebellum and spreading downward back of the spinal cord.

56. **Treatment of Torpid Wounds.**—Masmonteil's analysis of the phenomena of healing shows that the terminal fibers of the sympathetic nerve which respond to measures to induce revulsion are the same terminals which are responsible for the healing of wounds. If this is not occurring properly, measures to induce revulsion may start the wound to heal normally. The organism represents a neutral or slightly alkaline medium, of a given temperature and osmotic tension, in which are bathed the terminals of the sympathetic nervous system. Every substance which differs in temperature, in osmotic tension and in chemical composition from the conditions in this medium has an exciting action on the nerve terminals. This action, however, occurs only in a narrow range, varying with each substance, and also with the individual susceptibility at the moment; above this it injures the protoplasm. The sympathetic nerve fibers accompanying the vessels have been incriminated recently as a factor in causalgia, and this distressing form of neuralgia is being cured now by severing the hyperexcitable sympathetic vascular plexus involved. Masmonteil is convinced that a similar nerve trouble is responsible for the nonhealing of torpid ulcers, only here the difficulty is that the nerve is hypo-excitable, practically paralyzed, and no vascular reactions occur. The same patient may present causalgia in one region with a torpid ulcer at another. Sympathetic paresis is thus the secret why certain ulcers fail to heal and why the measures liable to be effectual for them are all in the line of nerve stimulants. This conception, he declares, explains likewise the mechanism of the phenomena of inflammation, and links together the various measures against atonic conditions, while explaining the mechanism of trophic ulceration—all falling under the workings of one law of general biology.

58. **Epidemic Meningitis.**—Ramond relates that in about a third of his cases of epidemic meningitis in soldiers, the disease runs the classic course and recovery seems to be impending, but then symptoms develop indicating involvement of the ventricles or ependyma. He has trephined the ventricles in twelve cases of this, in nine from the top, in two from the side and once from the back. In three cases complete recovery followed and marked improvement was evident in every case, but the intervention came too late in the other cases and all died in from three to fifteen days except one patient, who survived for three months. He uses silver trocars, 7 cm. long and from 1 to 1.5 mm. in diameter, with two side holes at the tip. The trocar is introduced for 4.5 or 5 cm. As the guide is withdrawn, fluid usually spurts. It may have to be cautiously aspirated out or rinsed out by injecting 2 c.c. of the antiserum. Then the antiserum is introduced in an amount corresponding to two-thirds of the fluid evacuated. The patients bore the operation well, and he declares that it is "absolutely inoffensive." He applied this trephino-puncture, as he calls it, only as a last resort, but his experience has encouraged him in future to apply it earlier.

61. **Sodium Citrate in Physiologic Solution.**—Chaton was much impressed by the death of two women, one a few hours after childbirth, the other after hysterectomy for fibromas, both of which had been accompanied by severe hemorrhage. The symptoms indicated that death was due to cardiac thrombosis, the blood having evidently acquired abnormal coagulating properties as a defensive reaction to the repeated hemorrhages. Neither the loss of blood nor surgical shock could be directly incriminated for the fatality. In connection therewith he has been experimenting with sodium citrate, instead of sodium chlorid, in the physiologic salt solution. His results have been encouraging and experiments on the dog have confirmed the harmlessness of intravenous injection of a solution of sodium citrate after much loss of blood. It seems promising, especially after childbirth, when the blood naturally shows increased coagulating power. In these cases it might be well to associate it with a stimulant for the heart. Injected in small doses, and early enough, it might check coagulation in the veins and thus ward off or arrest phlebitis.

Policlinico, Rome

July 9, XXIII, No. 28, pp. 865-892

62 Early Diagnosis of Pulmonary Tuberculosis. C. Martelli.—p. 865.

June, Medical Section No. 6, pp. 161-192

63 *Serologic Diagnosis of Tuberculosis. (Ricerche serologiche nella tubercolosi.) L. Datta.—p. 161.
64 Culture Mediums to Substitute Petruschky's Whey Medium. (Substrati di cultura artificiali in sostituzione del siero di latte di Petruschky.) M. Pergola.—p. 177.

63. **Serologic Diagnosis of Tuberculosis.**—Datta devotes six pages to parallel tabulation of the findings in sixty tuberculous patients with the skin tuberculin reaction, agglutination and precipitin tests, and fixation of complement by two different technics. Most of the patients had pulmonary tuberculosis, but a few had tuberculous meningitis, Addison's disease or polyserositis. The tuberculin reaction was the most constant of all the tests in pulmonary tuberculosis except in the most advanced cases. The fixation of complement reaction came next in order of frequency, and was most constant in the graver cases. This renders it useful in prognosis. The agglutinin and precipitin tests never gave

independent positive findings but trailed the others, giving positive findings in the milder cases, the precipitin reaction occurring a little more frequently than the other. In diagnosis, therefore, and in prognosis, especially in pulmonary tuberculosis, he advises applying both the skin tuberculin test and the complement fixation test, with possibly the precipitin reaction as a subsidiary test.

Riforma Medica, Naples

XXXII, No. 19, pp. 501-528

65 Soldier's Heart. (Le nevrosi di cuore e la guerra.) A. Ceconi. —p. 501.

66 Diplococcus Pleuropulmonary Congestion. U. Baccarani.—p. 505.

No. 20, pp. 529-556

61 Chronic Myeloid Leukemia with Hematomyelia in Woman of 34. R. Rummo.—p. 529. Concluded in No. 21.

No. 21, pp. 557-584

68 Tuberculous Process in Tonsil with Secondary Pleurisy and Apical Lesion on Same Side. S. Pusateri.—p. 562.

Semana Medica, Buenos Aires

XXIII, No. 20, pp. 547-574

69 *Leprosy in Argentina. (La lepra. Su origen, difusion y profilaxis. Lo que se debe hacer en la Argentina.) J. Penna. —p. 547.

70 Cesarean Section in Lower Segment of the Uterus. (Cesarea segmentaria.) N. P. Costa.—p. 552.

71 *Postoperative Accidents. E. P. Siri and G. Borra.—p. 568.

No. 21, pp. 575-596

72 Organic Dementia with Pseudobulbar Syndrome. F. F. Morixe. —p. 575.

73 Sexual Perversion. (Anomalias y aberraciones del instinto genesico.) A. Stucchi.—p. 581.

74 The Chemical Properties and Biologic Rôle of Filotion, the Albuminoid Substance which Produces Sulphuretted Hydrogen in Presence of Sulphur. J. de R. Pailhade.—p. 591.

69. **Leprosy.**—Penna is chief of the National Public Health Service as well as professor of epidemiology at the University of Buenos Aires, and he here discusses the prevalence of leprosy in Argentina and what should be done to combat it. He relates that there are no ordinances preventing lepers from traveling from place to place and thus spreading infection, and no institutions to isolate them even if legislation should be taken to enforce segregation. Cases are known in greater or less numbers in every province, the absence of any attempt at isolation having resulted in the spread of this disease in recent years into regions previously exempt from it. Recent proposed legislation to combat leprosy and other avoidable diseases was voted down for reasons of economy, the "million pesos" this would require being regarded as extravagance. No one seemed to take into account the sixteen million pesos spent by the country in caring for the sick, to say nothing of the thirty thousand victims that might have been saved. There is no public institution where lepers can find treatment and shelter. When will legislators realize, he exclaims, that the best intentioned decrees and ordinances and laws are not enough to prevent diseases nor to treat them; all their provisions, the most altruistic and the most scientific, are of no use whatever when no funds are forthcoming to enforce them. The Argentine government summoned a conference of medical experts in 1906 to discuss the question of leprosy. Resolutions were adopted and presented to parliament, and other appeals have been made since by Penna and others, but no attention has been paid to them by the legislators. The leper can board a train or mingle with the populace otherwise and no one has a right to interfere. Even private benevolence has done nothing for lepers with the exception of a small endowment at one hospital which supplies tobacco and other minor luxuries to the lepers that come for treatment to that hospital. A colony was planned on an island by private initiative ten years ago. Penna would like to have leper asylums organized near the main foci of the disease, not at remote points expensive to reach.

71. **Postoperative Convulsions.**—In the case reported a scrotal hernia required resection of omentum in a man of 29. The wound was closed except for a gauze drain and the patient seemed to be doing well when he developed sudden contractions of the whole body. They were so abrupt and so violent that the body sprang up from the bed at brief intervals. These convulsions gradually grew less violent, but the man died the third day from secondary hemorrhage brought on by the violent movements.

Nederlandsch Tijdschrift voor Geneeskunde, Amsterdam

July 8, II, No. 2, pp. 97-192

75 Experience and Deductions in the Practice of Medicine. (Ervaring en bespiegeling in de geneeskunde.) A. Sikkel.—p. 98.

76 *Cyclitic Myopia, Optic Myopia and Infantile Glaucoma. (3 bijzondere vormen van bijziendheid.) W. Koster.—p. 113.

77 Endonasal Treatment of Frontal Sinusitis. (Endonasale behandeling bij aandoeningen der voorhoofdsholten.) A. De Kleijn. —p. 124.

78 Present Status of Question of Etiology of Pregnancy Toxicoses. (Over de aetiologie der zwangerschaps-toxicosen.) B. Slingenberg. —p. 125.

July 15, No. 3, pp. 193-276

79 *Thyroid Insufficiency a Factor in Epilepsy and Migraine. (Het klinisch ziektebeeld der genuine epilepsie: psychische epilepsie, poriomanie, migraine.) G. C. Bolten.—p. 206.

80 The Tonsils and Respiration. (De weg van den inademingsstroom door den pharynx in verband met de functie der tonsillen.) P. J. Mink.—p. 225.

81 Importance of Occult Blood in Excluding Simple Neurosis. (De waarde van het onderzoek dèr ontlasting op blood.) W. Hoogslag.—p. 236.

76. **Unusual Forms of Myopia.**—Koster has noticed that the forms of myopia which cannot be classed as school myopia or progressive myopia can be grouped under three headings as a rule: the myopia from cyclitis, that left by spontaneously subsiding glaucoma in childhood, and the congenital or genuinely optic myopia. He gives the details of a number of typical cases in each group, emphasizing the differentiating points and expatiating on the importance of a correct diagnosis both for treatment and to ward off further harm. The prognosis of the cyclitic type is bad, whatever technic may be applied. It begins in youth, in otherwise healthy children. Heredity is unmistakable also in these cases, generally a congenital predisposition, and the affection is moderately progressive. The chronic cyclitis commencing so early interferes with the nutrition and growth of the eye. The eyeballs are large, the conjunctiva injected and rather dry, with a tendency to lie in folds, the pupil is not wide, the vitreous humor early becomes troubled. The fundus shows a small crescent on the temporal side of the disk but there are no special signs of choroiditic changes. Complications are liable and manifold. In two cases cited, in men of 50 and 35, the affection had progressed to detachment of the retina. Mercurial treatment was then instituted and vision was retained in the other eye enough for the men to get around in the street.

An inherited predisposition was evident in the cases of stationary buphthalmos, as a consequence of glaucoma in childhood, which he reports. In one the mother was hypermetropic and the canal of Schlemm in the child must have been defectively developed, entailing the buphthalmos and the myopia. An infant in the family moves its right upper lid as it sucks. In another family two sisters had had glaucoma or stationary buphthalmos while two other sisters and the father had the congenital or optic form of myopia. The myopia in the glaucoma case had evidently been aggravated by too strongly negative glasses for near work. In a third family a boy of 13 has still manifestly progressing buphthalmos, while it is stationary in a girl of 8. In the congenital or optic myopia type the eye is as sound as an emmetropic eye but optically presents myopia from birth. It is important to differentiate this rare type, as no treatment is needed and the prognosis is better than with other forms of myopia of equal degree. He cites cases in which the myopia increased somewhat at puberty and decreased in others, and discusses the mechanism involved.

79. **Thyroid Treatment of Epilepsy.**—Bolten's long article is an argument in favor of the assumption that in many cases the primal source of epilepsy and migraine is in the perverted or insufficient functioning of the thyroid or parathyroids. This allows abnormal processes in the digestive tract, with chronic autointoxication as the result. Certain cases of migraine, like the cases of genuine epilepsy, are the consequence of hypothyroidism and hypoparathyroidism, the

migraine in these cases representing merely a rudimentary form of a genuine epileptic seizure. These thyrogenous cases are benefited by systematic thyroid treatment. He gives it in the form of fresh juice pressed out of the organs in question, injecting the pressed juice into the rectum. The attack of migraine, like the epileptic seizure, is a phenomenon from toxic action, a reaction on the part of the organism to cast off the toxins that have accumulated in the cerebral cortex.

He emphasizes that the clinical picture of epilepsy is not so uniform as generally assumed, although the manifestations in the individual patient usually show great uniformity. Besides the common type, petit mal, typical seizures and change of character, the psychic type includes the maniacal, the paranoid and the melancholia cases on one hand, and epileptic delirium and somnambulistic conditions on the other. This psychic epilepsy occurs almost exclusively with the severe forms of cerebral epilepsy, traceable to some old meningo-encephalitis or something of the kind. In all his experience he has encountered only one case in which two attacks of psychic epileptic phenomena developed in genuine epilepsy, each lasting three or four days and each terminating with profuse sweating. The patient was a man of 32. Bolten protests against calling these psychic manifestations "epileptic equivalents." The epileptic seizure, and likewise the attack of migraine, is a phenomenon indicating that the toxins acting on the cortex have reached their bearable maximum, and the organism reacts with the seizure. Ulrich found an inherited predisposition in 200 out of 500 migraine patients and it was probable in 80 more, thus in over 50 per cent. In 12 per cent. the patients had both migraine and epilepsy, and 38 other migraine patients had epilepsy in the family.

Bolten's thyroid treatment, based on these and other arguments which he presents, have given good results in 6 cases of cerebral epilepsy with alternating attacks of migraine; also in 2 cases of genuine epilepsy with attacks of migraine, and in 2 of uncomplicated thyrogenous migraine. One watchmaker of 32 who had had migraine since early manhood and epileptic attacks for six years, gradually increasing in frequency until they occurred once or twice a month, improved under eight months of thyroid treatment until he had practically no further symptoms and his brain was much clearer. Another man of 45 has been under Bolten's charge for five years and has had no further attacks of either migraine or epilepsy since his course of thyroid treatment, when previously he had come to have two or three seizures a night. His migraine had developed about the age of 20 and genuine epileptic seizures at 38.

Hospitalstidende, Copenhagen

July 12, LIX, No. 28, pp. 673-696

82 *Experiences in Military Hospital in France Last Winter. (Krigskirurgiske Indtryk fra Frankrig.) P. Guildal.—p. 673. Commenced in No. 27.

83 Pedunculated Sarcoma on Small Intestine. (Stilket Sarkom fra Tyndtarmens Serosaside som Aarsag til Ileus.) P. Møller. —p. 679.

82. **With the Danish Medical Mission in France.**—Guildal reviews the impressions of his five months of service in an ambulance in France and from his visits to other hospitals. He comments on the extensive sifting of the wounded; those wounded in the head, for instance, being sent to a hospital near the front caring exclusively for this class of wounds. Another thing that impressed him particularly was the celerity and skill with which at the Compiègne Hospital the 1,700 wounded were moved down into bomb-proof cellars when bombarding began. Infection occurs in a more malignant form, even with minor wounds, than we see in peace, even with the largest accidental lesions. He says of Carrel's method of aborting infection that it may clear up the wound more promptly than other technics, but that it is a long and tedious task to apply it, and it can be done only by well trained attendants. The results have not been so good in other hands. Guildal is inclined to ascribe the benefit from it to the preliminary thorough mechanical opening up and cleaning out of the wound, under general anesthesia, usually with ethyl chlorid. Gas gangrene is not seen any more when this thorough *débridement* of the wounds is a routine measure, unless the interval since the injury has been too long, as in one case he saw where the man with a wound in the knee had lain between the trenches for four and a half days.

The hospital in charge of Gaudié made a peculiar impression, as he prefers methylene blue for his disinfectant and the patients and physicians, the beds and the whole hospital were stained blue. He treats a wound like a malignant growth, excising in every direction into sound tissue, and flooding with an aqueous solution of the blue, with an alcoholic solution for the skin. The method certainly gives good results.

The trend on the whole as the war progresses is more and more to operative intervention and all efforts are devoted to have it done early. One flying ambulance for laparotomy work consists of eleven automobiles and fifteen surgeons, permitting continuous work. Underground bomb-proof laparotomy rooms, less than 900 meters from the enemy's trenches, are not uncommon.

Hygiea, Stockholm

LXXVIII, No. 12, pp. 801-880

84 Morgagni as Pioneer in Pathologic Anatomy. (Den patologisk-anatomiska vetenskapen och Giovanni Baptista Morgagni.) G. Hedren.—p. 801.

85 *Treatment of Tuberculosis on Partial Antigen Principle. (Om behandling av tuberkulos med partialantigen enligt Deycke-Much.) S. Berg.—p. 841.

86 Necropsy Confirmed Disputed Diagnosis of Paralytic Dementia in Case with Litigation. (Ett omstritt interneringsfall. Epilog.) O. Kinberg.—p. 858.

85. **Treatment of Tuberculosis on the Partial Antigen Principle.**—The details of fourteen cases are given, as also the quantitative intradermal reaction in eleven healthy persons. No positive influence on the course of the disease from the partial antigen treatment could be detected.

Ugeskrift for Læger, Copenhagen

June 29, LXXVIII, No. 26, pp. 1079-1118

87 Pantopon. (Om Sahli's Pantopon.) H. Jacobæus.

July 6, No. 27, pp. 1119-1150

88 Specificity of the Precipitin Reaction in Diagnosis of Syphilis. (Undersøgelse over Fældningsreaktioner.) H. I. Bing and P. Schmitz.—p. 1119.

89 *Laryngostomy. L. Mahler.—p. 1125.

90 Extensive Eczema Marginatum after Application of Compresses. M. B. Pedersen.—p. 1131.

91 *Cardiospasm; Four Cases. Kramer-Petersen.—p. 1133.

89. **Laryngostomy.**—Mahler applied laryngostomy for chronic stenosis and also in a case of recurring papillomas, and expatiates on the comparative simplicity and ease of the operation and the fine results. His first patient was a girl of 17 who had been tracheotomized for croup at the age of 4 and had been compelled to wear a cannula since. The larynx had grown up below the vocal cords and she had no voice. The larynx was slit on the median line and the fibrous tissue obstructing it was all excised. The wound was drained and after healing of the old fistulas and a Glück plastic operation, clinically normal conditions were restored, the girl being able to breathe and speak normally by the end of a year. Various other measures had been tried before to relieve her of the cannula, but all had failed. In the second case a girl of 8 had already had five operations for recurring polyps in the throat, and had been wearing a tracheotomy cannula for three years. The larynx was thoroughly curetted through a median incision, and there have been no further signs of papillomatous excrescences during the months since. The incision could be closed in twenty-five days after the laryngostomy. Fontaine has a record of twenty-three laryngostomies with one death, for which the operation was not responsible.

91. **Cardiospasm.**—Petersen reports four cases of cardiospasm with secondary dilatation of the esophagus, in all of which conditions were restored to clinically normal by systematic dilatation with an inflatable bag. The patients were all adults and the cure was complete and permanent.